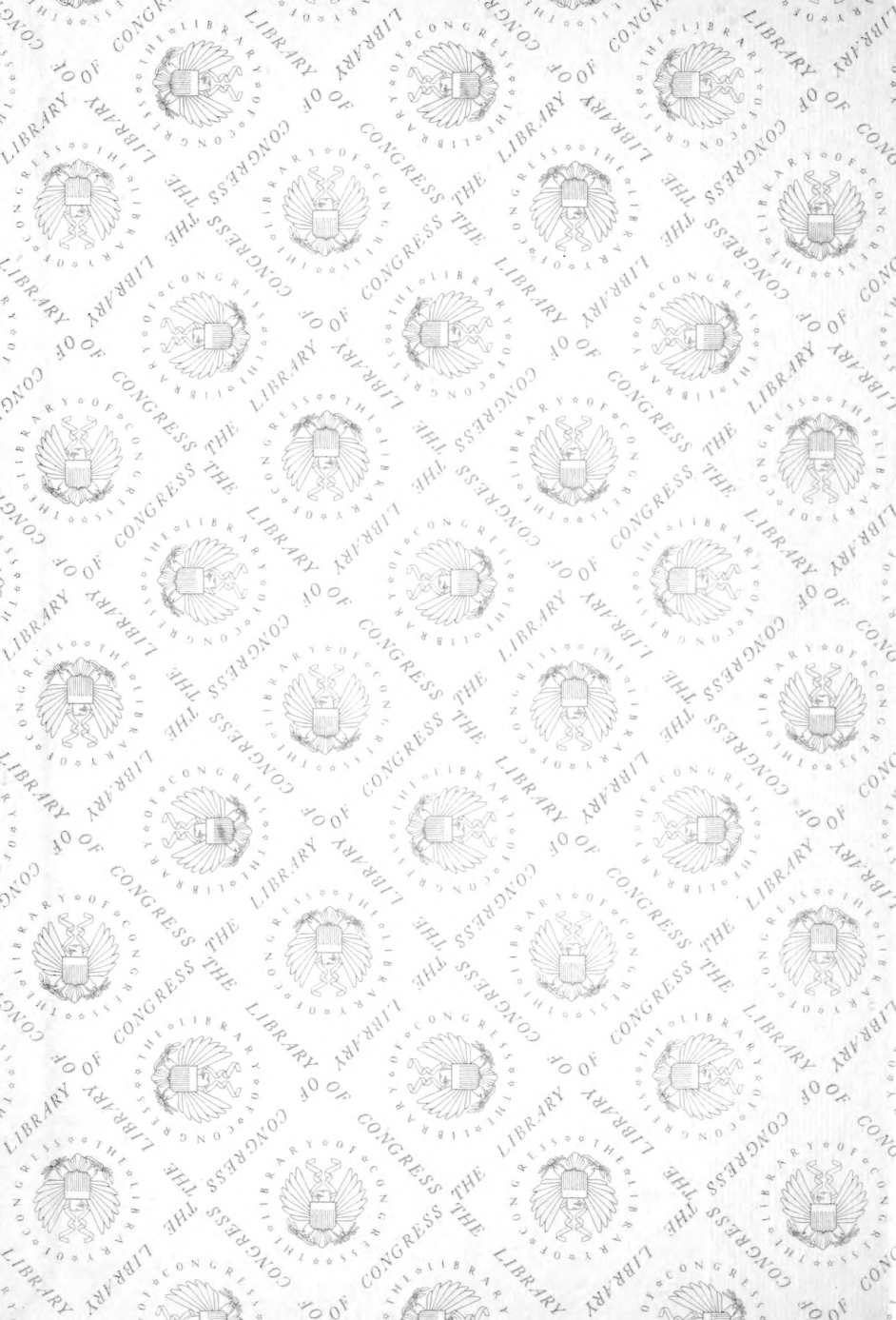




THE STORY OF COTTON







IN THE COTTON FIELD



The Story of Cotton

BY

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ILLUSTRATED BY

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The Story of Cotton

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CHAPTER I

A TRIP TO THE PLANTATION



HILIP PIEDMONT was very busy sharpening his pocket-knife in the little workshop near the stable when he heard his father calling, "Philip! Philip, don't you want to go out to the plantation with me this morning?"

Philip ran out into the driveway, and saw his father already seated in the light wagon and holding the reins over a big bay horse. "Yes, indeed, father," he replied; "I always want to go out to the plantation, especially Saturdays. Isn't Helen going?" and he looked toward the house for his

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younger sister, who was always ready for a drive with her father and brother.

"Waiting for Helen," called Mr. Piedmont, and at the same moment Helen appeared at the piazza door, tying on her big sun-hat. Her mother was beside her, and cautioned the little girl not to play in the sun too long; for the April sun is hot in South Carolina.

"Aunt Cassie will look after Helen," Mr. Piedmont assured his wife, "and we'll be home by sunset," and the little party started merrily off for Mr. Piedmont's cotton plantation, which was situated about five miles from Columbia, South Carolina.

It was the very first of April, a clear, sunny day, and as they drove by the big cotton-mills on the outskirts of the town and heard the whirr of the machinery, Phil announced, "I am going to have a cotton-mill of my own, some day."

"Well, I am going to live on father's plantation when I grow up," declared Helen; "I think it is much nicer to watch cotton grow than to see it made into yarn and cloth."

"Well, I know there's lots of fun on a planta-

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tion; there's 'possums to be caught for one thing," said Phil thoughtfully.

"Yes, and the mocking-birds," said Helen. "Why, they sing so much sweeter out there; and there are so many more of them. Why don't we live at the plantation, father?"

"Chiefly on your account and Phil's," answered her father smilingly; "it is much better for you to go to school in Columbia than to run about on the plantation."

It was not long before they came in sight of the plantation buildings—a square white house with verandas, where Aunt Cassie kept house for Mr. Piedmont's overseer, and a short way off a long row of sheds where the cotton was stored, ginned and baled and made ready for market.

"There's Aunt Cassie now!" Helen exclaimed, as they turned in the driveway. A large black woman in a cotton dress, and a white turban on her head, stood smiling on the steps. She made a low curtsy as her visitors stepped from the wagon.

"I'm right glad to see yer, honey," she said as

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Helen called out, "Aunt Cassie, I can stay all day."

Mr. Piedmont and Philip left the little girl on the porch steps and drove down into the field, where they saw the overseer, Mr. Smith, directing the laborers.

"Good morning, sir," said Mr. Smith, coming up to the wagon. "You see we are getting a good start. I have thirty acres all ready for the seed besides this field we are planting."

There were three colored men at work very near where they had stopped. Philip noticed that the man ahead chopped a hole with a hoe, on the top of the raised bed of earth, at intervals of about twelve inches; the man right behind him dropped eight or ten cottonseeds in each hole, and the third negro followed him and carefully covered the seed.

"How much seed does it take to plant an acre, Mr. Smith?" questioned Philip.

"About three or four pecks," replied Mr. Smith; "with this weather the seed ought to be up in ten

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days from now. I think everything looks well for a good crop."

Philip was ten years old and had made many visits to the plantation, but had never felt so much interested in the planting of cotton, and he listened eagerly to all Mr. Smith had to tell his father about the condition of the ground.

"We ought to begin hoeing by the first of May," decided Mr. Piedmont, looking approvingly along the straight lines of furrows on each side of the cotton beds.

"Yes, sir, the first blossoms will be out early in June, and by that time the plants ought to be fifteen inches high. We will be able to begin picking in August this year, I think."

"Don't be too hopeful, Smith," responded Mr. Piedmont laughingly; "I'll drive back to the stable now and leave the horse. I want to look over the gin a little, and see what repairs are needed."

"What is the 'gin,' father?" questioned Philip. "Of course I know it's a machine that cleans cotton, but I don't really know what it is."

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"Wait until we get up to the cotton sheds," answered his father. "Here, Tom!" he called, and a bright-eyed negro boy came running out of the stable and took charge of the team, and Mr. Piedmont and Philip walked across the yard and entered one of the larger sheds.

"This is a cotton-gin," said Mr. Piedmont.

Philip laughed. "I know a cotton-gin when I see one," he answered, "but I reckon I don't know just what it is."

"Well, this is a saw gin," replied his father. "The old kinds were known as roller gins, and those were pretty nearly as old as cotton itself. I suppose the first gin was a flat stone, on which the seed cotton was placed, and a wooden roller, moved by the foot, was employed to press the seed out. But this, you know, takes a steam engine to run it. See these two cylinders," and Mr. Piedmont pointed to the two cylinders of different sizes, mounted in a strong wooden frame; "you see one of these has a number of circular saws fitted into grooves cut in the cylinder. The other is a hollow cylinder mounted with brushes, the

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tips of whose bristles touch the saw-teeth. Now you have seen the cotton put into the hopper; there it is met by the sharp teeth of the saws, torn from the seed, and carried to a point where the brushes sweep it off into a convenient box. The seeds are too large to pass between the bars through which the saws stand out."

"I believe I could make a little one myself," declared Philip, looking over the machine with more interest than he had ever shown before.

"Well, Eli Whitney, who invented this machine, began making things when he was about your age, my boy," replied Mr. Piedmont encouragingly. "He was only twelve years old when he made a very good violin; but the cotton-gin was the most useful thing he ever made."

"How was the cotton cleaned in old times?" questioned Philip.

"The negroes used to clean it by hand, generally in the evening, after the work of the field was over. To separate one pound of clean cotton from the seed was a day's work for a woman."

While Philip and his father had been talking

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about the cotton-gin, Helen had followed Aunt Cassie to the kitchen, and was sitting in the open doorway enjoying a drink of cool milk and listening to the good-natured colored woman's talk.

"Declar' if don't seem good to have white chil-lun 'bout the place," she said, breaking some eggs into a china bowl and beginning to beat them vigorously with a long-handled spoon; "I'm jes' gwine to beat you up a little cake for luncheon, missy," she continued smilingly. "Land sakes, seems like ol' times to see a little girl sittin' in my kitchen door. Your ma used to sit there her very own self, missy, when she wan't no bigger'n you be."

"What did my mother used to do when she was about as big as I am?" questioned Helen eagerly.

Aunt Cassie chuckled. "She used to do all sorts of things," she replied, "but she just admired most to sit right in that kitchen door an' hear me tell 'bout the days when there was nigh a hundred men workin' these cotton fields; and when your grandma had a dozen of us tendin' to the house. Those were great days, missy!"



SITTING IN THE OPEN DOORWAY

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Helen finished her milk and set the glass carefully on the table. "I think I'll go out and play under the pine trees, Aunt Cassie," she said; "you can call me when the cake's ready."

"Sho' I will, missy; but keep where you'll hear when I do call."

"Yes, indeed. Why, you can see me, Aunt Cassie, if you step to the door."

Aunt Cassie nodded, and Helen went across the driveway into the shade of a grove of tall pines. She could see the plowed fields and the men at work.

"It isn't nearly so pretty as when the cotton is in blossom," she said aloud, and seated herself on the thick bed of pine spills. Just above her she could hear the musical calls of the birds, and on the further side of the driveway a little peach orchard was in full bloom.

She picked up the big cones of the pine and began setting them about in squares. "This is a house, and this is a garden," she said aloud, and just then heard her name called from the direction of the stable. "Helen! Helen!"

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"That's Phil," she exclaimed, and forgetting all about the house and garden, she ran down the driveway.

"Come on, Helen," called her brother; "Tom has a tame 'possum down at his cabin, and he's going to let us see it."

"'Tain't 'zackly tame," interrupted the negro boy, "but it's caught, an' I reckon that's about all I kin say," and he smiled good-naturedly.

Tom was several years older than Philip, and had always lived on the plantation. Philip thought the colored boy very fortunate because he had the whole plantation as a playground; could make himself useful about the stables, go on 'possum hunts with the men, and on fishing excursions to Sweetwater pond.

Philip and Helen listened eagerly to Tom's story of the capture of the opossum, and soon reached a neat little cabin back of the cotton sheds where Tom's parents lived.

"My, it looks like a cat!" exclaimed Helen, as she saw a little animal in a box, the open side covered with wire netting.

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"Cats don't have such long ears," said Philip, "nor such a long nose."

The little creature curled itself up in the further corner of the box, and looked so frightened and unhappy that Helen did not take much pleasure in looking at it.

"I think you ought to let it out, Tom," she said, but Tom shook his head.

"My mammy is gwine to roast him," he said; "gwine to bake sweet potatoes and have a fine 'possum dinner."

"I wouldn't eat it," declared Helen. "I do wish you'd let it out, Tom!"

But Tom was not to be persuaded, and Helen left her brother at the cabin and walked back toward the house. As she passed the cotton sheds her father called to her. "Come here, Helen," he said; "here's something you will like to see."

"Oh, father! May I have one?" exclaimed Helen, for her father was holding two little fat black spaniel puppies in his arms.

"Why, yes, you may have them both," answered Mr. Piedmont, "but they will have to live here at

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the plantation; and when you come out you can have them to play with."

"I do wish we lived here, father," said Helen, as she took one of the puppies in her arms and smoothed its shining head. "I would rather live here than anywhere in the world."

"Well, I think we must persuade your mother to come out and stay through the summer, until after the cotton is gathered. When does school close?"

"The last of May," said Helen, "nearly two months more. Why, father, the puppies will be nearly grown up then."

"No, indeed they won't; but they will be just old enough to be a nuisance," laughed Mr. Piedmont; "but I think I can promise you that by the time the cotton is in blossom we will all be here at the plantation for the summer. And there is Aunt Cassie ringing the bell for luncheon, so we must hurry back to the house."



CHAPTER II

PHIL GOES FISHING



It was early June when the Piedmonts moved out to the plantation, and now came busy days for Mr. Piedmont and for Philip, too, for the boy was always in the fields, and always found some new thing to interest him.

One morning he found Tom with a very long face.

"What's the trouble, Tom?" he asked, "lost your 'possum?"

"Wus' 'n that," answered Tom, rolling his eyes solemnly.

"What is it?"

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"Weevils," answered Tom.

Phil laughed. "A weevil is a bad thing for cotton, I know, but they needn't make you look quite so sober."

Tom looked at Phil a little scornfully. "I reckon you don't no much 'bout weevils," he replied.

"What do you know about them?" asked Phil.

"I knows they're terrible little, no longer than a quarter of an inch, and they're gray, and Boss Smith kalkilates to have me pick 'em," and Tom walked slowly on toward the field.

"I'll ask father about weevils," resolved Phil. "I don't see how a little bit of a thing like that could do so much harm," and he hurried after his father, who was walking some distance ahead.

"Father, what makes cotton-boll weevils so dangerous?" he asked.

"They eat up the plant," answered Mr. Piedmont; "they are one of the worst enemies to cotton. If we did not keep a close watch on this little pest there would not be a blossom in all this cotton field. It hides away under the rubbish at

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the surface of the ground, or among weeds and trash at the margin of the fields, where it stays all winter and is ready for the new plants in the spring. A good cotton planter, my boy, has to have his eyes out for all sorts of things."

"Can't you get rid of them?" questioned Philip.

"A good sharp frost in December is the best remedy," responded Mr. Piedmont, "for it will kill all those insects which have not reached the beetle stage. But we can't trust always to frost; as soon as we see signs of the boll-weevil we send out the boys and men to pick them from the plants and destroy them. That's what will keep Tom busy for a while. It doesn't do to let the weevils get ahead of us."

"Is there anything else that hurts a cotton plant?" asked Philip.

"I must show you my book on 'Cotton Insects,'" replied Mr. Piedmont. "I believe it tells of nearly five hundred which hurt the cotton plant more or less. As soon as a young plant comes up it has to begin a fight for its life. There is a caterpillar called a cut-worm, which will cut the

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young plant off at the surface of the ground. It hides in the earth during the day and does its work at night. And while the plant is young and tender, plant lice gather upon it, and later on all sorts of plant bugs and beetles appear to feed upon it. There are many interesting stories of the way they work."

"Does cotton grow anywhere else than in South Carolina?"

"Yes, Philip. Cotton was one of the valuable plants of the world before South Carolina was ever discovered. Weren't you reading a book about the Hindoos last winter?"

"Yes, sir. But I don't think it said anything about cotton," replied Philip.

"Perhaps not, but as far as the history of cotton can be traced, the Hindoos were the first people to make use of it. Here comes Tom with some message from the house," he concluded as the negro boy came running down the field.

"Missy Helen can't find the puppies," he said, as soon as he came within hearing. "She was playing with them under the pine trees, and she

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went after a drink and when she come back the puppies were gone."

"You'll have to go help find them, Philip," said Mr. Piedmont.

"But tell me where else cotton grows besides South Carolina," insisted Philip.

Mr. Piedmont laughed, but he was well pleased with the boy's interest.

"Let me see," he said slowly. "Cotton grows in India, Egypt, China, Japan, Africa, Asia, Italy, and when Columbus landed in the West Indies in 1492 he found the people using its fiber to weave cloth. Now run and help your sister find the puppies."

"I say, Tom," said Philip, as the two boys hurried back toward the house, "anybody has to know a lot to raise cotton."

"I s'pect they do," agreed Tom, "but, let me tell you, you have to know a sight to get a chance to go fishin' these days, too. Seems if I didn't get a day off more'n half the time."

"Can't we go this afternoon?" replied Philip eagerly.

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"Can if you'll tell Mister Smith to let me have a breathin' spell from pickin' weevils," said the colored boy hopefully. "I jes' natcherly despise them weevils."

"I'll ask my father," said Philip. "There's Helen now. Where did you leave the puppies, Helen?"

"Right near the driveway, Phil," answered the little girl, "and I wasn't gone two minutes, and Tom looked everywhere for them, didn't you, Tom?"

"I sure did 'cept up in the trees, an' I knowed they wan't there."

"Git right out o' my kitchen," sounded Aunt Cassie's voice; "I 'clare to goodness if one o' them dogs wan't a walkin' right into my oven, an' the other one a-scramblin' roun' in de pantry like he was crazy." And Aunt Cassie appeared at the corner of the house shooin' the two fat puppies ahead of her.

"They must have followed me up to the kitchen and hid," exclaimed Helen, running to recapture her pets.

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"You ought to name those puppies," declared Philip.

"Why, Phil Piedmont! They were named last April, the very day Mr. Smith gave them to father. Don't you remember? Mr. Smith named them 'Tip' and 'Top' because he said they were tiptop dogs," said Helen.

"I recollect," announced Tom, but Philip said that he had never heard them called anything but puppies.

"Which is Tip?" he questioned.

"The one with the white nose," explained Helen.

Mr. Piedmont gave his consent for Philip and Tom to go fishing. They planned to follow up a small stream which flowed across one end of the plantation, where Tom often caught chub and an occasional trout.

"You can go, too, Helen, if you'll fasten up those puppies so they won't follow us," said Philip. But Helen had other plans. She and her mother were going for a drive that afternoon to see an old negress who had formerly lived at the

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plantation, but who now lived with her grandchildren. They owned a small plantation of their own some two miles from the Piedmont place.

Aunt Juno, as the old negress was called, had formerly been a skilled weaver of cotton cloth in the days when each plantation manufactured its own cloth. Aunt Juno still had her own loom, spinning wheel, and cards, which she had used for many years, and took great delight in telling of the old days, and Mrs. Piedmont wanted Helen to hear Aunt Juno tell of those old times.

"What is a 'weaver,' mother?" questioned Helen, as they drove along the pleasant road shaded by locust trees. "I thought weavers worked in mills."

"So they do, Helen. But years ago, when there were not so many mills, women used to weave a great deal of cloth. Why, that blue and white bedspread on your bed was woven on this very plantation. The cotton grew in our fields, Aunt Juno spun and carded the cotton, and your grandmother wove the spread."

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"But how did she get blue cotton?" asked Helen.

"She colored it with indigo," answered her mother; "when you begin to study botany you will learn a great deal about cotton and about indigo, too, for they are both very interesting plants."

"Tell me about them now, mother," asked Helen, leaning back in the roomy phaeton; "tell me about cotton. I mean tell me what I will learn about it when I study botany."

"You will learn that it is 'herbaceous, shrubby or arborescent,'" replied Mrs. Piedmont with a little laugh at her small daughter's puzzled look, "and you will also learn something which you can find out for yourself right in the cotton field, that it has a silky fiber which clings closely to the seeds."

"But won't I learn interesting things about it in botany?" questioned Helen.

"Yes, indeed, you will. You will learn that some cotton has a yellow lint instead of white, but that is generally a wild variety. And you will find out that covering the cotton fiber is a sort of



ACROSS THE FIELDS TOWARD THE BROOK

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varnish known as cotton wax. This has to be removed before the fiber can be dyed," replied Mrs. Piedmont, "but I think Aunt Juno can tell you more interesting things about it than I can."

"But Aunt Juno never studied botany," objected Helen.

"She has studied cotton," answered her mother; "she has gathered it in the fields, cleaned it from seeds and dirt, spun it into yarn for stockings, dyed it, and woven cloth of it."

While Helen and her mother were enjoying their drive, Philip and Tom tramped sturdily across the fields toward the brook. They each carried a light bamboo fishing-rod which Mr. Smith had loaned them, and Tom had an old tin can filled with worms for bait. The afternoon sun was very hot, and the boys were glad enough to reach the shade of a small grove of oak trees near the stream. They stopped to rest for a few minutes.

"My, this is like working in a cotton field," declared Phil, taking off his broad-brimmed straw hat, and fanning his flushed face.

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"No, sah! 'Tain't a bit like it," responded Tom; "'course it's jest as hot, but it's a sight dif-runt. Now, if we wus a-pickin' weeds in a cotton field 'twould be cos' we had to. But gettin' hot goin' fishin' is 'cos we likes to."

"Well, come on," said Phil; "I can see the brook now."

"'Tain't no time to catch fish," grumbled the colored boy; "ought to start out 'fore sun-up. Then's when they'se lookin' about for breakfus'. 'Bout now they'se crawled into a shady place an' takin' a nap. I'm terribul sleepy myself."

"Well, wade along the edge of that brook and that will wake up the fish and you too," answered Philip.

Keeping well in the shade the boys followed the stream to where it fell over a bed of rough stones. There was fall enough to make a little cascade and the boys stopped to look at it admiringly.

"This is just the place for fish," declared Philip. "See, the sun hardly gets in here at all; it is shady and cool. I'll bet I can get a good

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trout here," and he baited his hook carefully and made a skillful throw toward a big rock at the foot of the waterfall.

"I 'spect you will," answered Tom admiringly, "but I'm so powerful sleepy I'm jus' gwine to lie down a minute or two under this tree," and Tom curled himself up comfortably while Phil watched his line eagerly.

He clambered on over the rocks, skirted the waterfall and found dark, shady pools above it. But he had gone some distance up the stream before he caught his first fish. It was a fine trout, and the boy wrapped it carefully in wet oak leaves and put it between two large stones. "I'll get it when I come back," he resolved, "and Aunt Cassie can cook it for father's supper," and he went on with hardly a thought of Tom, who was fast asleep under the oak tree.

Mrs. Piedmont and Helen returned from their visit in good season for supper.

"Where's Phil?" exclaimed Helen as her father came up on the shady veranda.

"He went fishing with Tom. About time he

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was back," answered Mr. Piedmont. "Why, there is Tom now. Tom, where's Philip?" he called.

"Ain't he come home?" responded the negro boy in a surprised tone. "I s'posed he'd cum home. I took a little sleep up the brook a-ways and when I woke up I couldn't see nuthin' of him so I cum along home."

Mr. Piedmont did not feel anxious about Philip, for he did not think the boy would be long absent; but when the hour for supper came and went and the sun began to approach the western horizon he resolved to go after him, and with Tom to lead the way started toward the stream.



CHAPTER III

IN THE COTTON FIELD



JUST as they came in sight of the little waterfall Mr. Piedmont heard a measured "tap, tap," as if someone was hammering.

"What's that noise, Tom?" he asked.

Tom shook his head, "You don't reckon 'twould be spooks, does you, Mister Piedmont?" he said, rolling his eyes toward his companion.

"Spooks! Nonsense, Tom! You know well enough there isn't any such thing," replied Mr. Piedmont.

"Yas, sah," agreed Tom, but he kept very close to Mr. Piedmont's side, and peered cautiously

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ahead through the gathering shadows, "'Twas right here I went to sleep, sah!" he said, pointing out the oak tree, "an' Philip, he climb up over those rocks."

The tapping noise grew louder, and as Mr. Piedmont clambered over the rough ground and reached a little level bank he exclaimed in amazement:

"Philip Piedmont!" For there was Phil, standing in water half-way to his knees and busily engaged in hammering one rock with another.

"What in the world are you doing, Phil?" exclaimed his father; "why didn't you come home with Tom?"

"Didn't know that Tom had gone home," declared Philip; "thought he was asleep. Look out where you step there, father; I've made a water-wheel, and here's just the place to put it if I can break off the corner of this rock. Do you know there's water-power enough here to run a cotton-gin?"

Mr. Piedmont laughed. "Well, it's way past supper-time," he answered, "and you'll have to

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wade ashore and leave your water-wheel until some other time."

Philip obeyed promptly. "I've been thinking all day about that man who invented the cotton-gin," he said, as they walked toward home, Tom hurrying on well in advance of them. "How many years ago was it?"

"It was in 1793," replied Mr. Piedmont, "and when Whitney applied for his first patent, the total export of cotton was less than ten thousand bales, and, thanks to Whitney's invention, fifty years later it was four million bales; and the value of his famous invention has grown so that its money importance to this country can scarcely be estimated."

"And he began to make things when he wasn't any older than I am?" questioned Philip.

"Yes, but I don't believe he forgot when it was supper-time," responded Mr. Piedmont; "he not only made things but he unmade them. One day, when he was about your age, he took his father's watch apart, but he was able to put it together again so neatly that his father never discovered it

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until he himself told him many years afterward."

"Oh, father!" exclaimed Philip, coming to a standstill, "I caught a splendid trout. It's back near my water-wheel, I must go get it," and he turned and ran swiftly toward the waterfall and soon returned, bringing the fish carefully wrapped in the oak leaves.

The morning after the fishing excursion, Philip was up in good season, for he had heard Mr. Smith say that the negroes were to begin "cultivating" that morning, and Philip wanted to be on hand when they started out. The cotton fields had already been freed from weeds by hand-hoeings and now it was time for the plows to break out the spaces between the beds, while the hoe hands were to follow and pull up close to the foot of the cotton plants the loose dirt left by the plows. This is called "hauling," and by it the cotton is kept from falling down, and the grass is kept under.

Philip found that his father and Mr. Smith had just seated themselves at the breakfast-table, so he

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was in good time to go out to the fields with them.

"How would you like to ride the new sulky cultivator, Phil?" asked his father, as they finished breakfast and made their way toward the stables.

"I'd like to," answered Phil enthusiastically, and he was soon mounted on the seat of a machine pulled by two horses. The sulky cultivator, he found, had large metal disks or plates that revolved, three on each side of the row of plants, cutting the earth into fine pieces and throwing it up toward the roots of the cotton. Mr. Smith swung Phil up to the seat and handed him the reins.

"The horses will go steadily almost without any driving," he said, "and I shall keep pace with you in the next row."

There were several of these plows, or cultivators, standing ready to go into the cotton fields, and Philip felt as if he were really beginning to be a cotton-planter as he started his team along one of the straight, long furrows. But by the time he had gone down two long furrows and back

IN THE COTTON FIELD

he was quite ready to give up his place to a pleasant-faced colored man who was waiting. The sun was very hot, and, although the horses went steadily, Phil did not think the high seat of the sulky very comfortable.

"Well, Philip, how do you like cultivating?" questioned his father.

"I like it," declared Philip, "but not so well as I do seeing it done. How long will it be before the crop will be ready to gather?"

"Not before early in September this year," answered Mr. Piedmont. "I hope we shall have a fair amount of rain the coming month or the fiber will not develop well."

"What is fiber?" asked Phil, curiously.

"Come up to the house where we can find a little shade, and I will tell you," replied his father, and they were soon seated on the shady veranda from which they could look off across the fields.

"The first thing in comparing samples of cotton, as you will know when you become a cotton manufacturer," began Mr. Piedmont, "is the difference in the length and the fineness of the fiber. Now

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you want to know what the fiber really is? Well, a perfect cotton fiber consists of four parts: 1, an outer membrane, or skin; 2, the real cellulose, which is 85 per cent. of the fiber; 3, a central spiral deposit of a harder nature than the rest of the fiber; and 4, a central secretion that corresponds somewhat to the pith of a quill," and Mr. Piedmont nodded smilingly toward Philip as if the subject was fully explained, but Phil's puzzled look made him realize that there was something more to say.

"I'll try again," he said laughingly; "you know the boll or pod, of the cotton plant?"

"Yes, indeed, father. It's round like a walnut, and the seeds and lint are in it."

"Yes. Now if we should take one of these bolls before it was fully grown, and cut it open, we would find that it is divided into three or more parts, and the seed will be shown attached to the inner angle of each division. The seeds retain this attachment until they have nearly reached their full size and the growth of lint has begun on them, then as the lint increases in growth it forces the

IN THE COTTON FIELD

seed toward the center of the boll. The development of the fiber commences at the end of the seed farthest from its attachment, and gradually spreads over the seed as the process of growth continues. The first appearance of the cotton fiber occurs some time before the seed has attained its full growth. The continued growth of this mass of fiber assists in bursting open the pod when it is ripe. The fibers do not attain their full length until the pod has been opened and the fibers are exposed to the drying and ripening effect of the air and sun."

"Why, then fiber *is* the cotton," exclaimed Philip.

"Yes," replied Mr. Piedmont, "but we mustn't forget that cotton-seed is nearly as important as the fiber itself."

"They make oil out of it," said Philip.

"Why, yes, Phil, that is one of the things they make, and you and I must make a trip over to Mr. Mason's mill and see them extract the oil from the seed. It will be interesting for you to watch the process."

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"I know the cattle like cotton-seed meal," said Philip; "the cows like it and so do the mules, and Aunt Cassie feeds it to the chickens."

"Yes, this meal is made from the cotton-seed, ground just as corn is, after the oil has been pressed out. You will see how the meal is prepared at Mason's mill."

"When can we go, father?"

Mr. Piedmont laughed at his son's eagerness. "Just as soon as the cotton is gathered and ginned," he replied, "and probably that will not be until well into October."

"I shall be glad when the cotton is ready to gather," said Philip. "I am going to try to make a little gin over at the brook and run it by water-power."

"That's quite an idea, Philip," said Mr. Piedmont; "you shall gather the first cotton that ripens for your gin. Where is Helen? I have not seen her this morning."

"Neither have I," responded Philip, "but she is usually playing with Tip and Top in the pine grove. I'll go and find her."

IN THE COTTON FIELD

A little canvas square had been fastened between two pine trees about five feet from the ground, and under this Helen had established her play-house, and here Philip found her. Top was asleep, but Tip was being taught to offer his paw to shake hands.

"He has held out his paw twice, Phil," exclaimed Helen as her brother came into the grove; "but I'm tired of teaching him. It's most too warm to do anything," and she leaned back against a tree while Tip sauntered off and lay down beside Top.

"Come up on the veranda," said Philip; "father wants to see you, and Aunt Cassie is making some lemonade."

The two children found their mother on the veranda when they returned, and Aunt Cassie soon appeared with glasses and a pitcher, in which the ice jingled pleasantly.

"This is a good deal better than a hot cotton field, isn't it, Phil?" said Mr. Piedmont, as he poured out a glass of the cool drink.

"I like the cotton field," declared the boy;

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"there's always a lot to see and do there. Why, its fun just to see Tom pull weeds. He acts as if he would go to sleep over every one."

"I think I shall keep Tom up at the stables until the crop is ready to gather. The heat seems too much for him," said Mr. Piedmont.

"'Tain't the heat what ails Tom, Massa Piedmont," said Aunt Cassie with a chuckle; "he's my own gran'son an I knows jes' what ails him."

"What is it, Aunt Cassie?" questioned Mr. Piedmont.

"He's jes' natchully lazy," declared the old colored woman, "an' his maw don't seem to have the strength to reason it out of him, like I did wif his paw."

"I'll keep him busy at the stables, Aunt Cassie," responded her employer, and with a smiling "yas, sah," Aunt Cassie went back to her kitchen.

"May Helen go over to the brook with me this afternoon?" asked Philip; "there's a fine place to go in wading if she wants to, while I work on my water-wheel."

IN THE COTTON FIELD

"Why can't we all walk over?" asked Mrs. Piedmont. "I'd really like to go wading myself."

"So would I," responded her husband, and it was decided that later in the afternoon the entire family should walk to the brook. Mr. Piedmont felt some curiosity to hear Philip explain how he could use the water-power of the little stream to run a cotton-gin.



CHAPTER IV

HELEN'S ADVENTURE



“WHAT is a water-wheel, Phil?” asked Helen, as the brother and sister reached the shade of the oaks on their way to the brook.

“It’s a wheel turned by water, of course,” replied Phil; “wait till we get to the waterfall and I’ll show you; I had it nearly ready to work yesterday when father came after me.”

Mrs. Piedmont decided to rest at the foot of the little cascade, while Mr. Piedmont, Phil and Helen climbed up to the place which Phil had selected for his water-wheel. The one which he had made the day before, he declared to be only

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an experiment, as it was roughly whittled from pieces of shingles, but greatly to Helen's delight the fall of water striking against the paddles of the wheel made it revolve rapidly, and Mr. Piedmont was well pleased to see that Philip understood the principles of water power so well.

"See, father," he exclaimed, "a little shaft from the center of that wheel brought to the center of a wheel on his rock would have power enough to work a little gin, and I'm going to have it all ready in time for the first cotton. I'm going to make a bigger wheel, though."

"Can't I help you, Phil?" asked Helen eagerly.

"Yes," replied her brother, "and perhaps I can make you a little spinning-wheel next fall to spin cotton thread."

"That will be splendid," declared Helen happily, "but how will you know how to make one?"

"I can make one just like Aunt Cassie's, I know I can," answered Phil.

"Of course you can," said Mr. Piedmont; "why, even in old Bible times we read that the country around Jericho was noted for the cotton

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spun and woven there; and they made their spinning-wheels without the use of the good tools Phil can have, and without as good a pattern as Aunt Cassie's wheel."

"But what I want to know is when did people in the United States begin to raise cotton," responded Phil.

"That's right, Phil," said Mr. Piedmont, "and it's lucky that every South Carolinian can answer questions about cotton, for we were one of the first states to produce it. Virginia was the very first, beginning in 1621. And by the year 1700, the settlers were raising enough cotton to clothe their families, and spinning-wheels and looms were valuable possessions."

"I'm going down and get mother to go in wading," announced Helen, and left her father and brother and returned to the place where her mother was resting beside the shallow pool of clear water.

"Mother, Phil is going to make me a little spinning-wheel," she said, as she began slipping off her shoes and stockings. "Father has been telling

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him that years ago everybody wove their own cotton into cloth."

"Yes, indeed, a girl's education was not thought to be very thorough if she could not weave a bed-spread of wonderful design, as well as good cotton cloth."

"Could Phil make me a little loom?"

"Perhaps he could; he seems able to make a good many things," replied Mrs. Piedmont.

As Helen was dabbling her feet in the cool water they heard the sound of voices, and in a few minutes Aunt Cassie and Tom appeared. Tom was carrying a covered wooden bucket, and Aunt Cassie had a large basket.

"Just in time, Aunt Cassie," said Mrs. Piedmont, who had left directions that their supper should be brought out to the foot of the waterfall. "I knew it was near sunset, although it is so shady here that we cannot see the western sky. Call your father and Phil, Helen." In a short time a white cloth was spread upon the ground and the little party gathered about it to enjoy Aunt Cassie's cold chicken, light biscuits, and preserved

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peaches, while the wooden bucket was found to contain a jug of lemonade, carefully packed in ice.

"There are worse places in summer than a cotton plantation," declared Mr. Piedmont, leaning comfortably back against a tree and refilling his glass.

"But you must remember that all plantations are not like this," said his wife. "Here we have so many beautiful trees, and this fine stream of water. But on many of the cotton plantations of Georgia and Louisiana the people cannot have as much comfort as we do in the summer season."

"Well, it's a good climate for growing cotton," replied Mr. Piedmont, "and the planters there understand the soil of their plantations."

"What has soil to do with it?" asked Phil.

"Everything, my boy. While cotton is cultivated with more or less success on nearly all kinds of soil through the southern states, it is a most important thing to find out what kind of soil will yield the best crop. On sandy uplands the yield of cotton is usually very small; on clay lands, especially in wet seasons, the plants attain a large



"I'LL HURRY DOWN AND SURPRISE HER"

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size, but do not yield much lint. The safest soils for the crop are medium grades of loam. You know, Phil, that the soil is a source of food supply for plants, and a good planter is careful to see that his soil has the right conditions of moisture and heat. When you begin to study chemistry you will find out that certain soils haven't in them the things the plants need to feed on, and that is why we have to apply fertilizers."

Helen had finished her supper and had waded down the stream. The brook made a curve just below the spot where they had been sitting, so that she was soon out of sight. The western sky was filled with lines of crimson and gold, and as Helen came out into the open field she stopped to look at it admiringly. Then her glance fell upon a stout, sturdy figure, moving slowly along further down the stream.

"Why, that's Aunt Cassie!" she exclaimed aloud, "and I do believe she is fishing. I'll hurry down and surprise her," and the little girl made her way along the smooth bank as quickly as possible until she was directly behind the stout figure. Then

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with a little jump she sprang toward it calling out: "Boo! Boo!" at the top of her voice.

But if she had intended to surprise the fisherwoman she was not prepared to be surprised herself, and the yell which responded to her "boo" nearly sent Helen over backwards; for the figure that she had taken to be Aunt Cassie rose unsteadily to its feet, slipped on a wet rock and lurched forward face down into the shallow stream; while a frightened voice called loudly:

"Massy! Massy! I ain't doin' no harm, massy!" In a moment, however, the frightened woman had struggled to her feet and splashed across the stream and Helen had time to see that it was not Aunt Cassie at all, but a negress whom she had never seen.

From the opposite bank the woman turned a frightened look backwards, and when she saw the little barefooted girl standing there, her look of fear changed to one of anger.

"What you mean a-pushin' me into the brook an' tryin' to drown me?" she called. "I'se a comin' right back 'cross that brook an' put you right in it,

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I is," and she came down the bank as rapidly as she had gone up it. But Helen was not easily frightened and stood her ground.

"I didn't push you in. You slipped and fell in," she called back. "I thought you were Aunt Cassie; this is my father's brook. What are you doing here?"

"I'se a-gwine to souse you right into this water," declared the woman, who was now nearly within arm's reach of Helen. "A-rushin' out ob de woods an' a scarin' an ole woman mos' to def." Helen was just thinking that it would be better to run than to be "soused," when the woman's foot slipped and again she fell forward in the stream, and while she spluttered and struggled, Helen turned and ran swiftly toward the waterfall. But the woman was now thoroughly angry, and on regaining her feet she ran after Helen with such speed that she soon overtook her and held her fast. Before Helen could call out she had twisted her apron securely across the little girl's mouth, and picking her up in her strong arms turned and made her way swiftly along the field, keeping close to the edge

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of the woods. She had not gone very far when she came to an old wooden shack, with an open door and one window, from which a wooden shutter hung by one leather hinge.

"I'll jes' leave you to repent a spell, missy," panted the old woman, as she entered the shanty. "There ain't no folks livin' here now as I knows of, an' I kyant carry sich heavy loads as I uster; so I'll tie you up nice an' quiet and let yer be sorry fer abusin' a poor old mammy what never harmed nobody." As the negress talked, she slit long strips from her cotton apron and now tied Helen's hands behind her, and fastened her bare feet together.

"I got to git along home or I'd set a spell an' see how you like s'prises," she called back from the doorway, and swinging the door shut, she hurried off, leaving poor little Helen in the dark cabin.

When Mrs. Piedmont decided that it was time for them to start for home she sent Phil down the stream to find Helen. He went nearly to the place where his sister had seen the woman fishing, and kept calling her name, but got no response. He

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was just thinking that Helen must have crossed the stream and gone back to the waterfall on the other side when he saw Tom running across the field.

"What can Tom be running for," thought Phil, for Tom did not usually trouble himself to hurry.

"Where's Missy Helen?" called out the colored boy; "I saw ole Mammy Spruce a luggin' a child along the edge of the woods jes' now, an' I was scared fear 'twas Missy Helen. Ole Mammy Spruce gets terrible ugly some days."

"Which way was she going?" asked Phil.

"Right along up thar," said Tom, and in an instant the two boys were running in the direction Mammy Spruce had taken.

"She wouldn't dare carry Helen off, would she?" questioned Phil.

"If she got mad she'd carry missy jes' as fur as she could," answered Tom. "Her shack's way over near the Mason place; I don' reckon she'd take missy far as that. What's that cabin door shut for?" he exclaimed, stopping in front of the shack where Helen was shut in.

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"P'raps they're in thar. Ef they be 'twon't do for no boys the size of us to face Mammy Spruce!" and Tom's big eyes grew bigger at the very idea.

But Philip had not waited to hear Tom's word of caution. At the suggestion that his sister was in the little cabin he had given the old door such a push that it swung noisily inward, and Phil ran in after it, almost stepping upon the little figure in the white dress.

It did not take him long to untie the strips of calico which bound Helen's hands and feet, and to remove the bandage from her mouth and lead her into the fresh air. Then the little girl told him what had happened, as they hurried back toward the brook.

"Jes' think o' Mammy Spruce a-tumblin' roun' in de water," chuckled Tom. Philip heard his father calling his name and called back, and in a short time saw Mr. and Mrs. Piedmont coming to meet them. Then the story of Helen's adventure was re-told.

"I didn't mean to make her fall into the water,"

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said Helen, "and she was so angry she wouldn't listen to me."

"Drefful fierce Mammy Spruce is some days," added Tom.

"I must see Mr. Mason about the woman," said Mr. Piedmont. "She must not be allowed to wander about. My little girl might have fared worse than being left half an hour in a deserted cabin with such a creature as that about."

"I'm glad Tom saw her," said Helen, "I hated being all tied up and shut up in that cabin; but I don't believe she would have left me there all night."

"She might have left you there for days," said her mother, who had kept her arm about Helen all the way home.

But Helen was right. It was only an hour later when Mammy Spruce, thoroughly ashamed of getting so angry at a "little white child," came creeping to the cabin door to find it open and Helen gone. Then, frightened at the thought of what punishment might be meted out to her, the old

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mammy did not return to her cabin on the Mason plantation but started off along the road which led to Columbia, where she had children living with whom she resolved to stay until it was time for the cotton crop to be gathered.



CHAPTER V

THE OIL MILL



TOWARD the end of July, Philip was constantly looking for the appearance of the bursting of the cotton bolls. He had completed his small gin and his new water-wheel at the brook, and was very anxious to see if it would really clear the lint from the cotton-seed.

While Philip was watching the cotton, his father and Mr. Smith were looking over the sacks and baskets which would be used in picking the cotton. The picking of cotton is not an easy task. It means steady work bending in a hot sun, for cotton must not be plucked unless the sun is shining upon

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it, and a constantly increasing weight on the arm. Mr. Piedmont and Mr. Smith were kind overseers, and realizing that the steady work was a strain upon the patience of the negroes, did all they could to keep them cheerful. As soon as the fields began to whiten with the opening cotton, preparations were made for pails of cool buttermilk to be taken to the field hands during the hot afternoons; and their talk or singing was never reprov'd, as Mr. Piedmont believed that he secured more faithful service from cheerful workers.

It was the first day of August when Phil, looking across the rows of cotton plants saw a number of white, fluffy, blossomy looking objects here and there.

"Goody!" he exclaimed, starting on a run to find his father and tell him the news. "Father! father!" he called out, seeing his father coming toward the cottonfield, "look, the cotton is beginning to ripen. There are as many as a dozen open bolls in that row. May I pick them?"

"Yes," replied Mr. Piedmont, "they are ripening even earlier than I hoped. It has been a fine

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season for cotton, steady warm weather and just moisture enough to keep the plants healthy."

So the boy carefully plucked the white lint and hurried off to the brook. He put the cotton between the two smooth wooden rollers, started his little water-wheel, and was delighted to see the cotton pushed through to the roller with its sharp teeth, made of tiny nails, which separated it from the seed just as he had seen the big gin do.

In another week the big fields seemed to have blossomed anew, as the bolls opened and the pure white and creamy masses of the cotton fiber hung from almost every branch of the shrubs. Early in the morning the pickers were in the fields. As they filled their bags or baskets they were quickly emptied into larger baskets or boxes and carried away to the gin house so as to be safely under cover before the night dews came on.

Tom hated cotton picking. On taking hold of the boll the fibers are quite firmly attached to the lining of the pod, and Tom would make a quick snatch, thinking to gather the entire lock, but only



THE BOY CAREFULLY PLUCKED THE WHITE LINT

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to tear it in two, or leave a good deal adhering to the pod.

"I ain't gwine to be no cotton-picker," he declared to Phil, as his white playmate worked beside him to gather a basket of cotton for his gin.

"It's easy enough if you do it right," replied Philip. "Look, Mr. Smith says to put your fingers in the middle of the open pod this way," and Phil quickly cleared the whole pod with one movement of his hand.

Phil found that his gin worked very smoothly, but there were so many things to attract his attention in the fields and at the gin house that he did not go to the waterfall for many days.

Mr. Piedmont ginned and baled his own cotton on the plantation, selling the seed to his neighbor, Mr. Mason, who owned an oil-mill. Philip was very anxious to visit this mill and see how oil could be made from cotton-seed, and when the first big load of seed was ready Mr. Piedmont gave his consent to the boy's going with it to Mr. Mason's plantation. He gave Philip a letter to Mr. Mason, and Philip was ready before sunrise

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and seated beside the negro driver, with four strong mules ready and willing to pull their heavy load.

"Did you ever see them make oil, Uncle Moses?" asked Phil as they rode along.

"Yas," replied the negro, "I uster work in an oil-mill; I was the cook."

"Cook?" laughed Philip. "You used to cook for the men who worked in the mill?"

The negro shook his head smilingly. "No, sah. I was de cook in de oil-mill. Yer has ter be a fust-class cook, yer see," he continued, noticing Phil's puzzled look, "after the cotton-seed is all hulled and mashed up by the machinery they come a jumpin' along into the big kittles. Yas, they do. You'll see how 'tis over to Boss Mason's. Now some un' has to keep an eye on dose kittles and see dat de seed cook jest long nuff so's ter get de oil out. Generally takes 'bout half an hour; it takes judgment to be a cook in an oil-mill. Yas, sah!" and Uncle Moses cracked his long whip over the heads of his mules with an air of satisfaction.

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"The seed and the lint is all the good there is in cotton, isn't it, Uncle Moses?" asked Philip.

"Land sakes, boy! I should suttinly think 'twas your grandpa a-askin' that question. 'Cos that's jes' how folks uster reason in his day. Those was turrible wasteful days 'bout cotton; they suttinly was," and Uncle Moses shook his head solemnly.

"'Tain't so now," he continued, "yer paw makes money outen every part of the cotton plant. Yas, sah. Now you jes' take the stubble lef' in the cotton field. Yer paw puts the cattle right in an' they clean off the limbs and pods so that by January there ain't nuffin lef' but the stalks; and jes' listen to me, boy. Yer paw don' waste the stalks. He puts a machine into the field and peels off the bark, an' sells it to some folks what uses it in some kind of floor-dressin', yas, sah!"

"Are the cotton-seed hulls any good?" asked Phil.

"They suttinly is," replied Uncle Moses, "they'se good cattle food. Fact is, everything 'bout cotton is good fer suthin'."

Mr. Mason gave Philip a warm welcome, and

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told him that he had chosen a good time for his visit.

"The seed is coming in now in big loads," he said, "and we are working twenty-four hours a day. One gang of men runs the mill at night and another by day. You see this has to be done not to interrupt the cooking of the meats; the 'meats,' you know, are the inside kernels of the seeds."

"Uncle Moses was telling me about being a cook in an oil-mill," responded Phil.

"I suppose you know that the first oil-mill in this country was built at Columbia about 1825," said Mr. Mason, "and for many years after there were only a half dozen in the United States; now there are several hundred."

Mr. Mason's mill was not large, but as Philip entered he looked about in wonder. Mr. Mason showed him how the seed was cleaned and passed on to the hulling-machine, where it was hulled and cut up, and then carried on to the heaters. After the oil is extracted the meats are pressed into cakes. When these cakes are thoroughly dry, as occasion requires, they are broken up and

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fed to a mill which grinds them into a fine meal.

"Is that oil good to eat?" Philip asked curiously, as he watched the clear liquid dripping through a filter press.

"Indeed it is," replied Mr. Mason, "it is as good as lard in cooking; and some of the men put their bread under the press where the sweet, fresh oil drips on it and eat it with a relish. Then, a certain quality of the oil is used for manufacturing purposes. It is burned in miner's lamps and used in some medicinal compounds. Certain qualities of it make fine salad oil."

Philip told Mr. Mason of his gin at the waterfall and Mr. Mason promised to come over and see it. While Phil had been looking about the oil-mill with Mr. Mason, Uncle Moses had made a second trip with a load of seed, and it was now time for luncheon.

"Can I put a piece of bread under the press?" asked Philip, when Mr. Mason told him that it was time to go to the house for the midday meal.

"Of course you can," replied his companion,

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and a small negro boy was sent to the house and soon returned with a neatly folded napkin containing a thick slice of wheat bread.

"It's fine!" exclaimed Phil at the first mouthful; and although he thoroughly enjoyed his excellent luncheon he told Mr. Mason that the slice of wheat bread and oil was the best part of it. This seemed to please his host very much.

"I'll drive you home, Philip," Mr. Mason said, and Phil was well pleased to ride swiftly along behind the pair of gray horses which Mr. Mason drove, instead of going with Uncle Moses and the plodding mule team.

"There's a lot of machinery made for cotton, isn't there!" said Philip as they drove toward his father's place. "I used to think that a cotton gin was all there was to it until it was ready to spin into yarn and weave into cloth, but since I've seen your oil-mill I know better."

"Yes," replied Mr. Mason, "the oil is nearly as important as the cloth. I expect you will be inventing some machine to help us make even better oil, some day, Phil!"

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"Perhaps so," answered Philip seriously. "I think, though, I shall try to invent a better cotton gin."

"That's right," responded his companion, "that is what planters and manufacturers need."

As they turned in at the Piedmont driveway, Phil saw Tom leaning against a tree. Mr. Mason was driving slowly and Phil called out, "What's the matter, Tom?" for the negro boy's face was sullen and unhappy.

"What you t'ink?" he called back. "Missy Helen gone an' let out my nice fat 'possum. Been a' feedin' dat 'possum all summer on de bes' dere was, an' gwine to have him fer dinner tomorrow; an' Missy stepped down and let him out."

"Never mind, Tom, you shall have a fat chicken," Phil called back as the team passed the disappointed boy.

"I wonder what Helen did that for?" he said, turning to Mr. Mason. But Mr. Mason shook his head laughingly.

Phil did not wait a moment, after his father

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came out to welcome Mr. Mason and thank him for his kindness to his son, before he was off in search of Helen and to question her about the 'possum.

He found her under the pine trees with Tip and Top beside her.

"What made you let out Tom's 'possum?" he exclaimed.

"It wasn't Tom's 'possum," replied the little girl, "it was my 'possum. I bought it of Tom's mother and gave her the dollar that Aunt Ellen sent me."

"A dollar for a 'possum!" exclaimed her brother.

Helen nodded as if fully satisfied with the bargain. "I just couldn't bear to have the poor thing shut up any longer," she said; "I kept thinking suppose it was Tip or Top shut up, and going to be killed and eaten," and the little girl put a protecting arm over her pets.

"But people don't eat puppies," said Philip.

"Well, Tom won't eat that 'possum, either," declared Helen. "Do you know that we are go-

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ing to have a lovely time to-morrow? Mother is going to drive us over to Sweetwater Lake and stay all day."

"I wonder if Tom may go too," suggested Philip, "then he won't feel so badly about the 'possum."



CHAPTER VI

CROSSING SWEETWATER LAKE



THE road to Sweetwater Lake led for some distance between fields of cotton filled with busy workers. Here and there they drove through little stretches of greenwood, chiefly pine and live oak; and now and then there were rough banks of the red soil which one always notices in that part of South Carolina.

The sunshine and the heat were everywhere, but neither Mrs. Piedmont, Philip, Helen nor Tom, minded it very much. They all knew that it was splendid weather for gathering cotton, and rejoiced in it. On the way they passed many

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wooden cabins, most of them very poor and mean-looking, and saw many children, both black and white, playing in the sunshine. Half-way to their destination they drove by a dark-brick cotton-mill, two stories high, surrounded by small cabins which stood in the glaring sunlight without trees or gardens near them. Everything looked bare and ugly.

Philip turned to look back at the little settlement. "I don't believe mill people need live like that," he said, turning to his mother; "they could set out trees and vines, and plant flowers around those little houses, and then they would not look so hot and bare."

"Yes," responded his mother, "that could easily be done. But the trouble is the mill workers do not own their cabins, and the greater part of them do not wish to. They move from mill settlement to mill settlement, and so do not take much pride in the houses that shelter them."

"Well, then, the man who owns the mill ought to plant trees," insisted Philip. "If I run a cot-

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ton mill I am going to have two trees for every cabin."

"That's right, Phil," said his mother, "but it would be much better for the people who live in the houses if you could persuade them to plant the trees themselves."

"I wouldn't want to wuk in no mill," said Tom, from his seat beside Philip. "No, sah, I'd rather wuk out in de field."

"Won't you work in my mill, Tom?" asked Philip laughingly.

"You stick to raisin' cotton, don' yer go to spinnin' it," advised Tom, who had quite forgotten his lost 'possum in the pleasure of a day's outing.

They reached Sweetwater Lake before noon, and Tom unharnessed the big bay horse, rubbed him down carefully with handfuls of oak leaves, and gave him a drink of fresh water. Then the horse was fastened in the shade of a big tree and Tom went to help Philip get his fish lines ready.

"We ought to get pickerel enough for dinner," said Philip, as the two boys made their way along the shore to a point where several rocks stood up

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from the water, from which they planned to cast their lines.

When Phil and Tom started off to catch fish Mrs. Piedmont had spread a shawl under one of the live oaks near the water and arranged the carriage cushions to make a comfortable seat. She and Helen had taken off their hats and were enjoying the shade and the soft lap of the water against the shore at their feet.

The boys soon reached the rocks and were casting their lines hopefully off into the smooth lake.

"Wish't we wus over t'other side de lake," grumbled Tom, "dat's de place to fish fer pick-erel. Dey jes' natchully take to those coves whar dat watch-grass grows."

"Why can't we go over there?" suggested Phil; "it isn't half a mile across this lake."

"We kyant walk; it's too deep, and we kyant swim, so how be we gwine to do it?" replied the colored boy.

Phil turned an anxious look along the shore. He had noticed several pine logs partly in the water near where they were fishing, and now as

CROSSING SWEETWATER LAKE

his eyes again rested upon them a new idea came into his head.

"I'll tell you how, Tom," he exclaimed, pulling in his line and jumping from the rock to the shore, "see those logs? Well, we can pole ourselves across the lake on one of these."

"One a-piece?" questioned Tom.

"Yes," replied Phil, "you can go on one and I on the other."

"It'll be turrible hard wuk to get those logs clar into the watah!" objected Tom.

"Nonsense. Don't be so lazy, Tom," said Phil, who was already pulling and pushing the larger of the two logs nearer the water.

"We ain't got no pole," continued Tom.

"We can get a pole easy enough," said Phil; "there's a whole pile of young saplings cut and piled up right over there. They'll be just the thing," and finally Tom, who could think of no further objections, took hold of the log and, as he was much larger and stronger than Philip, soon had it floating in the shallow water.

"I'll take off my shoes and stockings and leave

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them here on the shore," said Philip, and in a few moments the two pine logs were well out from the shore, a bare-footed boy on each with a clumsy pole in his hand with which he pushed and directed his ticklish craft toward the opposite shore.

Tom had decided to sit astride his craft and made very good progress; but Philip stood upon his log, and by balancing himself carefully was able to keep in advance of his companion.

"It's fun, isn't it, Tom!" Phil called out.

Tom smiled happily. "Yas, sah. My feet's cooler than they'se been all summah."

They reached the long grass without accident, and here Phil, too, decided that he could fish better if he was astride the log, and carefully slid down till his feet were in the water. Their lines and bait were in their pockets, and Phil's first throw was rewarded by a vigorous bite; but in the excitement of pulling in the fish he forgot how ticklish was the craft upon which he had embarked, and a roll of the log sent him splash into water above his waist.

The log floated just beyond his reach and Phil,



THEY REACHED THE LONG GRASS WITHOUT ACCIDENT

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finding it hard work to keep a footing amongst the clinging grass, grabbed for the end of Tom's log.

"Wat you doin'?" shrieked Tom, for Philip's grasp on the log had made it bob and roll uncertainly, so that Tom was also sent rolling and tumbling into the water.

Both the boys grabbed at the log and, pushing it ahead of them, reached a more certain foothold and were soon on land.

Tom was rather pleased than otherwise to have had a dip in the lake without the trouble of removing his cotton blouse and trousers; but Philip looked at his own log, now far out of reach, with dismay.

"How can we get back, Tom? We can't both cross on your log, and it's miles and miles to follow round this lake to where mother and Helen are."

"Kyant follow 'roun' de lake," Tom assured him; "reckon you forget 'bout Saluda swamp lyin' right up thar," and he pointed toward the upper end of the lake, "that thar swamp kyant be crost."

CROSSING SWEETWATER LAKE

"But we must get back!" insisted Philip.

"Yas," agreed Tom, but evidently did not intend to puzzle his brains as to how it should be accomplished.

"It's lucky you had hold of your pole, Tom," went on Philip, "for now I see how we can get back. You can sit well up on one end of the log and I'll hold on to the other end, and you can pole the log across."

The colored boy turned a look of amazement upon his companion and shook his head. "No, sah," he responded.

"We must," insisted Philip, and at last Tom consented to the attempt.

"I can walk a long ways out," said Philip, as they pushed the log clear of the shore and Tom seated himself. "Now that I'm soaking wet I might just as well be in the water as out."

Tom said nothing. He was frightened for fear that Philip might again upset him, and he poled carefully and sat steadily. Philip kept his hold on the slow-moving log, and gradually the oppo-

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site shore grew nearer, the rocks were almost within reach, and then Philip's feet gripped at the sandy bottom and he was able to let go his hold on the log. The two boys scrambled up the shore and Phil looked at his dry shoes and stockings with a little sigh.

"It isn't any use to put these on," he decided, and taking them in his hands, and slowly followed by Tom, he made his dripping way back to where Mrs. Piedmont and Helen were.

"I've lost my hat and my fish lines, and been across the lake and back," Phil announced, as his mother exclaimed at his wet hair and clothing.

There was no danger of their taking cold, and they were all hungry for their luncheon, which Mrs. Piedmont soon had ready for them.

Tom went to give the horse a feed of oats, which they had brought in the carriage, and then Mrs. Piedmont told the boys that they must not go out of her sight until they were ready to start for home. Tom curled himself up for a nap a little way from where Mrs. Piedmont was sitting; Philip got out his pocket-knife and dried it carefully.

CROSSING SWEETWATER LAKE

"You might begin on my little spinning-wheel now, Phil," suggested Helen.

"I haven't the right kind of wood," replied Phil. "Say, mother, who made the first spinning-wheel?"

"The first spinning-wheel was made so many years ago that I do not believe any one is quite sure who invented it," replied Mrs. Piedmont; "but spinning can be traced back through many, many centuries. Perhaps someone began by taking a few cotton fibers and gently twisting them together with the thumb and finger of one hand, holding the cotton in the other, and at the same time drawing it out into a thread. Then some one discovered that if a bundle of cotton was fastened to a stick and carried under the arm that one could spin a thread as she walked about. So this stick under the arm was called a distaff, and the other stick, to which was fastened the end of the thread and by which it was twisted, was known as the spindle. And even to this day, in India, and many other of the less civilized parts of the world, the same rude methods are used. The name of

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the inventor of the spinning wheel is not known, but for many years it was the only machine used for the spinning of cotton yarn."

"Father was telling me that a man saw a spinning-wheel overturned and it kept on running while lying on its side, and that made him think that he could make a spinning-machine to be run by horse power, and he did make one. The man's name was Hargreaves," said Philip.

"Yes," replied Mrs. Piedmont, "and when you visit the mills in Columbia you will see many wonderful and ingenious inventions which men have made to spin cotton. Now wake up Helen and call Tom, for it is time for us to start for home."

Helen had gone fast asleep while her mother told about old-time spinners, but Philip was eager to hear and know more of the men whose discoveries had made cotton one of the most valuable of plants.



CHAPTER VII

A BIRTHDAY VISIT



ALMOST time for school, Philip," said Mr. Piedmont one September morning, as the boy stood near his father watching the "compressors," where the cotton, by means of a press, was being baled ready for its journey to the Columbia mills.

"Not for another week, father," Philip replied. "I do wish I could stay out here at the plantation. I am sure I learn just as much as I do in school."

"Perhaps you do, Philip, in one way; because you are observant, and because there is a great deal to learn on a cotton plantation. But you would not want other boys of your age to be in

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classes ahead of you at school. Then, too, it is better for Helen to be at school regularly, and your mother has decided to return to Columbia next week."

Philip sighed, and looked wistfully toward the cotton-press. The rough bundles of cotton coming from the gin ran under a series of smooth plates or levers, and were reduced by the pressure of steam from packages four feet deep to only seven inches when taken from the compressor. While in the press iron bands were put around the bales so they were ready for carting.

"If you were going to send that cotton a long way, would you bale it like this, father?" asked Philip, pointing to the pile of baled cotton.

"No, Philip, these bales are too clumsy for shipping. Each one of these will weigh five hundred pounds, and is too loosely packed. If I were preparing cotton to be shipped to New England or to Europe, I should have a new press, and should have the cotton baled and covered more carefully, so that it would not be injured on the way."

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"There are machines for everything about cotton except picking it, aren't there?" said Philip thoughtfully. "I should think that some one would invent a machine that would pick cotton."

"There have been such machines invented, but they have not proved successful," replied Mr. Piedmont. "It is about the same thing as inventing a machine to gather strawberries or raspberries. This could be done if it were not for the injury to the berries. Cotton-picking machines gather limbs, leaves, and bolls, and pass the whole through a cleaning separator that, the inventors claim, leaves the cotton in the condition of average cotton picked by hand. I had a cotton-picking machine out here and tested it, but it proved expensive and not satisfactory, so I stick to hand-picking."

"Mother was telling us about the first spinning-machines," said Philip. "I suppose when I go into the cotton-mill I will see all kinds of cotton machinery."

"You are fairly familiar with all the machines used on the plantation," replied Mr. Piedmont

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smilingly. "You know how cotton is ginned and baled, and you have seen what becomes of the seed. Now when you go into a cotton-mill, the first thing that you will see done is the weighing of the cotton. But the first machine that you would be interested in is the 'Cotton-Puller.' "

"What a funny name!" exclaimed Phil.

"Yes, it is also called the 'Bale Breaker,' " continued Mr. Piedmont. "This takes quantities of cotton from different bales and mixes it. Then comes the 'opening.' The matted masses of the cotton fibers are pulled apart and the cotton is formed into a large roll or sheet, called the 'lap.' When the cotton is opened out it is very carefully handled. Any dirt which may have clung to it is removed, and it is then gathered together in small strands, or ropes of cotton."

Mr. Piedmont now turned away from his son to speak with Mr. Smith, but Philip was too much interested to leave the subject, and ran after him.

"But, father," he said, "I want to know more about the 'Bale Breaker.' You said there was one,

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but you didn't tell me what it was like nor how it worked."

"Let me see if I can describe it," replied Mr. Piedmont. "You know that the cotton has to be mixed before it goes to the spinners, to secure a better grade of woven cotton. Well, the 'Cotton-Puller' consists of four pairs of spiked rollers. The bales of cotton intended for mixing are put near what is called a feed apron, a sort of scoop, and a layer from each bale in succession is placed on the apron. Then the apron feeds the cotton slowly to the revolving rollers of the machine, and the result is a pulling asunder of the cotton by the rollers, into much smaller pieces ready for the next machine."

"But what is the 'next' machine?" asked Philip.

"It is called the 'opener,' and is the most powerful machine used in cotton spinning," replied Mr. Piedmont; "and the most important part of it is the beater, to which is fastened a large number of steel spikes. These beat down the cotton, which is fed to it by rollers, and the opened and

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cleaned cotton is taken away from the action of the beater by an air current produced by a powerful fan."

"And after this the cotton is rolled out into 'laps,'" said Philip, remembering what his father had said earlier in the conversation.

"Exactly, and then separated in soft strands, and is ready for the carding engine. You will understand these machines much better, Philip, when you see them at work."

"I am going to see them at work just as soon as we get back to Columbia," declared the boy.

"That will be next week," his father reminded him, and Philip started toward the house to find Helen to whom he wanted to explain all that his father had been telling him.

As he passed the kitchen he heard Aunt Cassie singing loudly, and a fragrance of preserved fruit greeted him pleasantly.

"What you cooking, Aunt Cassie?" he called, stopping at the open door and looking in.

"I'm a-making persimmon jelly, honey," replied the good-natured colored woman. "I've put up

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a sight of p'serves fer yer ma to take back to town wid her. Yer jest wait a minute till I gits yer a bite to eat, honey." And Phil was well pleased to wait for the thick slice of wheat bread well spread with persimmon jelly which Aunt Cassie handed him.

"Where's Helen?" he questioned.

"She's out on de front ve'anda playin' with those puppies. They suttinly are a trouble to me, those dawgs," and Aunt Cassie's smile vanished.

"Yest'day they chawed up my new dish towels. I don' take no comfort with puppies, Massa Philip," and shaking her head Aunt Cassie returned to her preserve kettle and Phil went in search of his sister.

"Oh, Phil!" she exclaimed, as he came round the corner. "Do you know what day it is?"

"September twentieth," replied Philip. "Why?"

"Why!" Helen's voice was reproachful. "It is mother's birthday!"

"So it is," said the boy; "I don't see how I came to forget it. But what can we do? You know

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mother says that birthdays are to remind us to do things for other people."

Helen nodded happily. "That's what we are going to do," she replied; "father planned it all and Uncle Moses has gone after them with the mule team."

"After whom?" questioned Phil.

"Why, mother's Sunday school class. You know they are all little girls and work in the mill. And when father was in Columbia last week he saw the superintendent of the mill, and those girls are all coming out here to supper and be taken home in the cool of the evening."

Phil did not look particularly rejoiced at the news. "Does mother want them?" he asked.

"Of course she does," replied Helen, "she is going to have a nice supper for them out in the pine grove. And Tom is turning the ice-cream freezer this minute."

It was an hour later when the four big mules came trotting up the driveway with their wagon load of pale-faced mill children. Some of them looked no older than Phil and Helen, although



GLASSES OF COOL LEMONADE

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they were all twelve or thirteen years old, as the law will not permit the employment in the cotton mills of children under twelve.

Mr. and Mrs. Piedmont welcomed their little guests and while Philip and Helen brought them glasses of cool lemonade the little visitors looked about curiously.

"What do you do?" Phil asked one small girl, who had immediately made friends with Tip and Top.

"I draw-in," she replied soberly.

"I'm going to see all the machines in your mill next week," declared Phil.

This announcement did not seem to interest the little girl much. She looked longingly toward the shadows of the tall pines, and when Mrs. Piedmont suggested that they should go out to the grove where swings had been put up, she started off eagerly.

"Humph!" muttered Phil, "I wanted her to tell me what 'drawing-in' is. I'll find out, though, when I go through the mill."

The twenty little mill girls each had some special

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thing to tell Mrs. Piedmont, and after they had time to look about a little seemed perfectly at home. They enjoyed the swings, played games among the trees, and exclaimed joyously over the ice-cream, and when the hour came for them to start for home they all declared that it had been the best time they had had that summer.

"I wish every day was your birthday, Mrs. Piedmont," declared one of the older girls, "for it's the only day in the year that I have ice-cream."

Uncle Moses was all ready to start up his team when one of his passengers called out: "Where is Jane Maria Pennypacker?" and it was discovered that Jane Maria was not in the wagon.

Phil was sent back to the grove to look for her, and Mr. Piedmont went up to the house to see if by any chance the missing child was there. But after the most careful search, she could not be found.

"What shall we do?" exclaimed Mrs. Piedmont. "We must find the child."

Just then Aunt Cassie came cautiously around

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the corner of the house and beckoned mysteriously to her mistress.

"W'at you t'ink, honey!" she whispered, as Mrs. Piedmont hurried to meet her, "one o' those little mill scraps is hid up in my cellar closet. Yas'm, she sho'ly is. Fast asleep this minit."

It did not take long to awaken Jane Maria Pennypacker, but the little girl began to cry bitterly when Mrs. Piedmont gently led her up the stairs and told her it was time to start for home.

"I don' want to go," she whimpered. "I'd a sight ruther stay here and play with your little gurl," but was persuaded that she must not keep Uncle Mose waiting, and took her seat in the big wagon, and Uncle Mose started the mules toward Columbia.

The team had hardly reached the main road before Philip was asking his father what a "draw-er-in" did in a cotton-mill.

Mr. Piedmont looked at the boy smilingly, and said: "Well, Philip, I really believe that you will make another Arkwright, you are so much interested in cotton machinery."

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"What is an Arkwright?" demanded Philip.

"Arkwright isn't a machine," replied his father; "but he invented the most important machine used in spinning cotton. His name was Richard Arkwright and he was born in England in 1732, and he was not a great inventor, but he observed everything closely, and finally made a machine that would spin yarn by rollers. Arkwright was a poor boy, but he persevered in his undertakings, and was never ashamed to learn. When he was nearly fifty he began to study grammar, because he could not speak and write correctly."

"Shall I see any of his machines in the Columbia mills?" asked Philip.

"You will see machines that include Arkwright's invention and those of many other men," replied Mr. Piedmont; "but the real way of making a cotton thread to-day is not so very different from what it was a hundred years ago."

"You haven't told me what 'drawing-in' is, father," Philip reminded him.

"Wait until you get to the mill and you'll see for yourself," replied Mr. Piedmont.

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"I begin to wish we were going back to Columbia to-morrow," said Philip. "I know it will take more than one visit to the mills to find out how they spin cotton."



CHAPTER VIII

TOP AND TIP



THE last week at the plantation was a busy one for Philip. He and Tom visited the brook, took the little gin mill apart and carried it back to the house to be kept until another year. On this trip they took a look at the little cabin where they had found Helen.

"It wouldn't be a bad place to camp out," Philip said, looking at the stone chimney, and a rough cupboard built in one corner. "Any one could cook fish and game over a fire here, and make a fine bed of leaves to sleep on in that corner."

"I wouldn't sleep har', no, sah," exclaimed Tom,

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looking at Phil in amazement; "'twould be jes' de place for a ha'nt!"

"I wish you wouldn't be so silly, Tom," said Phil. "I have told you a hundred times that there isn't any such thing as 'ha'nts.' You just get frightened at your own imagination."

But Tom shook his head, and repeated that the cabin wasn't any place to sleep. Many of the negroes through that region imagine all sorts of "ghosts" or "ha'nts" as they call them; an inheritance from their fetish-believing ancestors of Africa.

Tom was having a week's holiday, and followed Philip about the plantation, indulging in frequent naps, but looking so unhappy whenever Phil spoke of his return to Columbia that the white boy was sure that his colored playmate would really miss him.

"Father," he said one day, "couldn't you take Tom into Columbia with us when we go?"

"No, Philip," replied Mr. Piedmont, "Tom is too lazy to take into a town. Here on the plantation Mr. Smith can see that he is kept busy some



THE CHILDREN WORKED HAPPILY

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of the time, and that he will learn enough about work to earn his living; but in town he would soon become worthless, like those negroes you see hanging about street corners. Here Tom stands a chance, but I couldn't look after him in Columbia."

So Philip said no more about Tom going away from the plantation. That very day Helen made a discovery which delighted Philip and made them both wish they could stay longer on the plantation.

Helen and Phil were playing on the banks of the stream just below the waterfall when Philip noticed that his sister was shaping a tiny figure out of the wet clay.

"Look, Phil," she exclaimed, "you can make anything out of this clay."

"I believe we could make dishes," declared Philip, and all that afternoon the children worked happily shaping rough bowls and cups of the smooth, sticky clay. When their mother came to walk home with them she looked at their pottery in surprise.

"This must be the very place where my great-

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grandfather made pottery a hundred years ago," she said. "He used to make enough for the uses of the people of the plantation, and he sold what was not needed here to peddlers who carried it from door to door."

"I do believe there is everything on a cotton plantation," said Philip.

"In old times," said his mother, "almost every article of use was made on a man's own property. The houses were built by their owners and servants, and much of the furniture was made on the spot. Spinning-wheels were made by local workmen, and so were the looms on which the cloth was woven. Wool and flax were products of a plantation as well as cotton, and different goods were made from these three materials. They got their dyes for colors from the woods and fields. Hides were tanned and all the shoes were home-made."

"They couldn't make straw hats, could they, mother?" questioned Helen.

"Indeed, they could, my dear. Hats of braided straw were made, and are still made in this vicinity. Baskets of every kind were made; Uncle Mose, you

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know, still makes fine baskets of split ash and of rushes for the cotton pickers to use."

"What else used to be made on plantations, mother?" asked Philip.

"Pottery, something like those dishes you and Helen made at the brook, only there were potter's wheels to smooth the clay into shape and it was backed to make it hard and smooth. Wagons and harnesses were made, and so were nails and horse-shoes."

"Why don't they make all those things, now?" questioned Philip.

"For the same reason that we do not weave our own cotton cloth, because machinery can do it for us so much cheaper and better than we can do it by hand," replied Mrs. Piedmont.

As they came near the house Aunt Cassie called out from her kitchen door: "Dat ar' Top puppy's took hissef off. Kyant find him no place."

"Oh, dear!" exclaimed Helen, "do you suppose he's really lost, Phil?"

"Those puppies are always lost," replied Phil, who had given a good many hours looking for Tip

TOP AND TIP

and Top only to discover them safely at home in some obscure corner. But Top's loss this time was forgotten for the moment by the news Tom had to give them.

"Wat you t'ink!" he said, coming out from a shady corner of the stable. "Lady's gone!" "Lady" was the big bay driving horse, a very valuable and highly prized animal.

"Looks like she was stole," went on Tom. "She was in the stable and yer paw stepped in to look at her, an' she wa'n't thar. Your paw an' Mister Smif are a-lookin' all over de place."

"And Top is lost, too," said Helen, but no one seemed to care about Top just now, although the little dog was to prove itself a more useful friend than any one imagined.

"Where do you suppose 'Lady' is, Tom?" questioned Phil, as he followed the negro boy back toward the stable.

"She ain't so dredful fur off," declared Tom; "'tain't an hour since I heard her a-whinnyin'. Tell yer wat I t'inks, I t'inks some er those low-lived niggers from Columbia has stole her."

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"Which way do you think they would go, Tom?" asked Phil eagerly.

"They'd just nachully make off tow'd the woods an' keep still thar a spell," replied Tom. "If 'twa'n't so dry we could track 'em."

"If those puppies were any good they could help us," said Philip.

"Whar's Tip?" demanded Tom in an excited voice. "I'll bet they took Top off along with Lady; yas, sah! An' Tip will follow Top an' we'll fin' 'em bof. Yas, sah."

Without waiting to tell this discovery to any older person the boys ran in search of Tip who was curled up asleep on the veranda. Taking the puppy to the stable, Philip set him down near Lady's stall.

"Find Top," he commanded, and Tip needed no urging; in an instant he was off running behind the cotton sheds and up the slope that led to the pine woods, closely followed by Tom and Philip. Now and then the puppy would stop, put his nose to the ground, change his course a little, and then run

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swiftly on. When he reached the edge of the woods Tip stopped and seemed to hesitate, and here for the first time the boys were sure that they were on Lady's track, for the ground was moist in the deep shade and there were tracks of a horse and of a man's footprints.

"Look!" said Tom in a half whisper, "somebody's a-leadin' Lady through de woods."

"We must catch up with them and get her," responded Phil.

"Yas, sah!" replied Tom, "but we'll hev to go terrible keerful. Any hoss-stealer ain't gwine to hand over no hoss to a couple of boys the size of us. We jes' got to manage easy."

"There goes Tip!" said Philip, and the boys were instantly on a run after the puppy, who ran along the edge of the woods for a short distance and then went nosing its way carefully around a group of big trees.

It began to get dusk in the shadow of the woods, but Phil did not think of this, so intent was he on following Tip.

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"Don' make no noise," Tom cautioned; "it's gettin' mighty thick woods har 'bouts an' we's likely to fall right 'cross 'em," and both boys avoided stepping on dry twigs or stumbling over rough knolls or underbrush.

They had been away from home several hours when a short joyous bark from Tip brought them to a standstill. "He's found them!" whispered Phil.

"Climb up that tree and climb quick," commanded Tom, and in an instant Philip obeyed. Tom chose another tree, and they were none too soon, for they had only securely fixed themselves upon strong boughs when they saw a dark figure coming cautiously along from the direction in which Tip's bark had sounded. The boys, peering down through the green branches, could see that it was a negro and that he was on the outlook for pursuers. He stopped beneath Phil's tree and the boys could hear him say "jes' the puppy a-follwin' t'other one," and then the man again disappeared in the shadows.

The boys slid down the trees and crept cau-

TOP AND TIP

tiously along behind him. Tip did not bark again, and the boys did not dare keep very near the figure.

"Scooch down, Phil," whispered Tom, and the boys hid behind a bunch of thick shrubs.

"Thar's Lady," whispered Tom, and through the darkness Phil made out the figure of a horse tied to a tree, but neither the man nor the puppies could be seen.

For a long time the boys did not know what to do. Finally Phil whispered, "Tom, you must go home and get father and Mr. Smith. I'll stay here and watch. If he goes to lead Lady off I'll follow them, or find some way of getting her home."

"I 'spec' it's nigh midnight," replied Tom, "but I'll go, yas, sah! dat thievin' critter ain't gwine to walk off with our Lady," and Tom overcame his fear of "ha'nts" and vanished silently in the darkness of the woods, while Phil crouched behind the bushes never taking his eyes from Lady. He listened intently for a bark from the puppies, but none came.

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The early morning light was creeping among the trees when Philip heard his father's welcome voice and dared to stand up and call out: "Here we are, father!"

"What's become of the horse thief?" asked Mr. Smith, as he untied Lady's halter.

"Evidently got frightened," said Mr. Piedmont, who was apparently better pleased to find his son than his horse, for the loss of Lady had been almost forgotten when neither Philip nor Tom could be found; and it had been an anxious time on the plantation until Tom appeared with his story of Lady's being hid in the woods and that Philip was watching over her safety.

The thief had disappeared and no trace of him was discovered. Mr. Piedmont praised Tom for his quickness and courage, and said that he was very proud of Philip. The boys were both very tired and hungry, and Mr. Piedmont put them on Lady's back and started them for home.

"But it's too bad we couldn't get Tip and Top," said Philip, as Lady carefully made her way through the woods.

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"Yas, sah, 'tis so," agreed Tom; "dey was mighty fine pups."

They had just reached the edge of the woods when a chorus of joyful barks made Lady start into a more rapid pace, and the two puppies came jumping out from a snug little hollow where they had evidently been curled up asleep.

It was a joyful procession that came into the stable yard. The puppies running ahead were warmly welcomed by Helen; and when Lady with the two boys on her back, closely followed by Mr. Piedmont and Mr. Smith, came in sight, a loud cheer was heard from the men at work ginning and baling the cotton.

Aunt Cassie hurried out from her kitchen to say that "breakfus' was nigh spiled," and reminded Mrs. Piedmont that she had "allers sed Massa Phil was jes' like his Grandpa, brave as a lion!"

Phil was glad to go to sleep as soon as he had eaten his breakfast, and for once Tom's right to sleep as sound and as long as he wished was not questioned.



CHAPTER IX

PHILIP VISITS A COTTON MILL



WISH that I could work in a cotton mill," said Philip a little wistfully as the Piedmont family drove by the big Columbia mills on their way home from the plantation. "Couldn't you get me a chance to work a week there, father, so that I could learn all about the machinery?"

"'All about the machinery,'" repeated Mr. Piedmont in an amused tone; "why, my boy, it would take you more years than there are days in the week to learn all about the machinery of a big cotton-mill."

"I'd like to work in one," insisted Philip.

PHILIP VISITS A COTTON MILL

"When you are a few years older you shall have an opportunity some vacation to work in a cotton-mill," promised Mr. Piedmont; "but I would be breaking a law to even ask for work for you now. The law is that no child under twelve shall be employed in a South Carolina cotton-mill."

"But I should think that boys of my age could do a good many things," said Philip.

"Yes, and children eight and nine years old used to be employed. But it was not good for the children. The confinement and steady work stunted their growth, they were growing up without any schooling, and the State wisely decided that children raised in a cotton-mill would not make the right kind of men and women."

"There are too many children in the mills now," declared Mrs. Piedmont; "but the cash girl in a department store or the children employed in glass factories and coal mines have work that is more injurious in every respect. I do not think I could consent to Philip's wish to work in a cotton-mill."

"But I am going in to see all the machinery; father said I could," the boy reminded her.

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"Yes, Phil, I have done even better than that for you," said Mr. Piedmont; "I have secured permission from Mr. Carter for you to visit his mill whenever you like as long as you report to him in his office first before entering any of the rooms."

"That is splendid!" declared Phil.

"I don't see what you want to go for, Phil," said Helen; "there are lots nicer places to go. And you won't have time to make my little spinning-wheel if you go to the mills every day."

"Yes, I will, Helen," replied her brother, "and I can make it all the better after I have seen big machines."

The next morning Philip was ready at an early hour for his first visit to Mr. Carter's mill. His mother smiled as she watched his sturdy little figure going down the street toward the river. She was glad that he was so much interested in everything belonging to cotton, as his father's chief property was the plantation and they looked forward to seeing Philip a successful cotton-planter.

Mr. Carter, the mill superintendent, and Philip

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were old friends, and the boy received a cordial welcome.

"What do you want to see first, Phil?" he asked. "Shall we begin with the scutching machine?"

Philip's look of surprise showed that he had never heard of a machine of that name, and he followed Mr. Carter toward the lower part of the building.

The mill where Mr. Carter was employed was one of six large cotton-mills. It was a four-story brick building, with double walls, the space between them being used for ventilating and heating. The elevator shafts were fire-proof, and the mill-shafting was all turned by electric power. Philip had often heard his father say that it was one of the best equipped mills in the United States, and he felt very proud indeed to think that the superintendent was his guide.

The picker-room was shut off from the rest of the mill by fire-proof walls, and from this room the cotton was delivered in the form of "laps," which are sheets of batting of loose texture, usually forty-eight yards long, to the scutching ma-

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chine. Phil watched its feed rollers carry the "laps" along to a "beater," which gave the cotton its final preparation for the carding machine. He remembered what his father had told him about opening cotton, and quickly understood that "scutching" was simply cleaning the cotton.

"Now for the 'cards,'" said Mr. Carter; "the 'cards' straighten out the cotton into what we mill men call a 'sliver,' which is really a loose, untwisted cotton rope. These 'laps' come out ropes, and coil themselves up in these round cans."

Philip looked at the carding engine admiringly. He saw the heavy lap of cotton pass over a series of rollers which carried it forward to others fairly bristling with a vast number of closely set and fine-drawn teeth, which combed and cleaned the fiber as it passed along. These steel teeth turned the fleecy cotton over a thin bar of steel and it fell curling and twisting in loose ropes or "slivers" into the cans. It seemed to Phil the most wonderful machine he had ever seen.

"You have heard about drawing-frames, I suppose?" questioned Mr. Carter.

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"No, sir," replied Philip; "but I know a little girl who told me that she was a 'drawer-in' in this mill, and I have been trying to find out just what she did."

"You will soon see for yourself," replied Mr. Carter. "Perhaps you may see the little girl at work."

"I hope I shall," said Philip.

"Has your father ever told you anything about a man named Samuel Crompton?" asked Mr. Carter, as they entered a larger room.

"No, sir," replied Philip.

"Crompton was the greatest of cotton-spinning inventors," said Mr. Carter; "he was an Englishman, born in 1753, and when he was fourteen or fifteen, he worked with his mother weaving cloth on a hand-loom at home, and attending a night school, where he was called 'a witch at figures.' He became greatly interested in trying to invent a machine that would turn out a better yarn than those in use, and after many years he succeeded. He was about twenty-seven years of age when he completed a machine, known as a spinning-mule,

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which has been of the greatest value to all cotton manufacturers."

While Mr. Carter talked, Phil had been earnestly watching the machine which Mr. Carter called a "drawing-frame." Three men were at work about it, and Phil noticed that eight cans of "sliver" stood in front of the machine, and these slivers moved upward between rollers covered with highly finished leather. The slivers were drawn out into one single strand, and fell into another machine, which Mr. Carter called a "slubber," which reduced the thickness and gave it a slight twist, and sent the strands on to be wound upon large bobbins.

"It's pretty nearly ready for the spinning-mule now, Philip," Mr. Carter said; "there's just enough twist in it now to keep the cotton together; and you'll soon find out what 'drawing-in' means. You know that without twist there would be no cotton factories," continued Mr. Carter, as they stopped before a long line of cotton-frames filled with big spindles of cotton.

"It is the twist that gives the thread its strength.

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There is a slight natural twist to cotton and these frames are to give it an artificial twist. Look, Philip, see this strand of cotton leaving the front or delivery roller and going down to this bobbin. You see the bobbin moves loosely upon a vertical 'spindle,' and the duty of this spindle is to give it the necessary twist. Now comes the winding, and winding cotton thread by machinery is one of the things which puzzled many inventors. You will see the drawers-in at work here, Philip. These spindles make nearly ten thousand revolutions a minute, and the high speed and the tension causes the threads to break frequently, and girls are employed to twist or draw the threads together."

"There's Jane Maria Pennypacker," declared Phil, noticing a girl deftly twisting threads. Her watchful eyes were upon the spindles and she did not look up to see who was going down the passageway near her spindles.

Philip noticed a number of boys taking off the full bobbins and putting on empty ones.

"Those boys are called 'doffers,'" explained Mr.

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Carter. "They have to work pretty fast, but their work is not steady. It's about thirty minutes work to thirty minutes play. Sometimes when they are not needed they are allowed to play out in the yard."

"I wouldn't want to be a 'doffer,'" said Philip, "I would rather weave cloth."

"We will have to go back to the office now," said Mr. Carter, "and when you come again I will show you what a weaver does and what a cotton-loom is like."

"Thank you very much, Mr. Carter," said Philip as he left the superintendent at the office door and started for home. He was eager to tell his mother and Helen all that he had seen.

Luncheon was ready when he reached home, and Helen and Mrs. Piedmont were waiting for him.

"I have a surprise for you after luncheon, Phil!" Helen exclaimed; "something lovely!"

"Ice-cream?" guessed Phil.

"After luncheon," Helen reminded him, and then Phil resolved not to guess any more.



“ I HAVE A SURPRISE FOR YOU ”

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"I can't guess," he declared; "my head is full of spindles."

His mother looked at him a little anxiously. "Then I think you must wait a few days before you visit the mill again," she said.

"Oh, no, mother!" objected Phil, "why, it's just getting interesting. I've found out how the cotton is made into yarn, and now I want to see the yarn woven into cloth."

"But I can't have spindles in my boy's head," his mother replied laughingly.

"Now, Phil, shut your eyes and promise not to look until I tell you to," said Helen as they left the dining-room; "and take hold of my hand and I will show you the surprise." So Philip closed his eyes and Helen led him down the porch steps.

"We are going toward the stable, I know that much," declared Phil; and at that moment a half-smothered bark made him exclaim, "It's the puppies!" and Helen let go his hand and said, "And something else!" and Philip opened his eyes to see Tom standing in the stable door, holding Tip and Top in his arms.

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"Yas, sah!" said the colored boy; "Boss Piedmont tell me fetch in these dawgs to Missy Helen, an' he say I was to stay till your school begun. Sort of a vacation fer me; yas, sah!" and Tom smiled broadly.

"That's first-rate, Tom," declared Philip. "Father must think a good deal of you to let you come in alone."

"'Twas considerbul much of a job to drive dat upstart of a mule an' keep dose puppies in the wagon, yas, sah!" declared Tom.

Phil was glad to have Tom in Columbia, and began to tell him all the wonders of the cotton-mill, but Tom did not seem much interested.

"Cotton-mills wuzn't ever meant for colored folks," he said; "an' I don' believes thar's anything in that mill half so hansum' as de cotton growin' in de field; a-blossomin' an' a-growin', an' den a-openin' its pods into more blossoms fer us to pick. 'All white and fluffy. 'Tain't no use, dar's nuffin so hansum' as de cotton in de field."



CHAPTER X

PHIL EXPLAINS A "LAW"



RS. PIEDMONT gave her consent for Philip to visit the mill the next morning while Tom busied himself in making a little kennel for Tip and Top.

Mr. Carter was expecting Philip, and said: "Well, Phil, you have seen cotton planted, gathered, ginned and made into yarn, and now I suppose you want to see it made into cloth."

"Yes, sir!" replied the boy.

"Do you know what weft and warp are?" questioned the superintendent.

"No, sir," said the boy.

"The yarn that you saw yesterday is ready to be

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used for weft; but before it can be used as warp it has to pass through a number of processes into a sheet form, consisting of many hundreds of threads, which are then wound on a beam. The ends, separate threads, say four hundred threads on a beam, then pass through a box containing starch to stiffen and strengthen the yarn and render it smooth."

"But I don't know what 'weft' and 'warp' mean now," interrupted Philip.

"The warp is the threads going lengthwise through the cloth. The weft is the threads woven across the warp," explained Mr. Carter. "Now when your warp comes out from the starch box it is drawn between heated cylinders and wound upon a loom-beam."

As Mr. Carter talked, they had entered the weaving room, and Philip could see the weavers at work.

"There are 'drawers-in' in this room, too, Philip," said Mr. Carter. "These loom-beams are now put into what is called a harness, and each separate end of the threads must be drawn through

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these tiny rings. But there is a new machine nearly ready for use which will set these workers free."

Philip looked at the looms admiringly. One weaver was managing eight looms, but most of the operatives had charge of only four. He saw the shuttles and bobbins weave the smooth fine white cotton cloth, watched it roll smoothly through a machine called the "shearer," which sheared off all the loose threads, then it passed through a jet of steam, and heated rollers ironed it smooth. He went with Mr. Carter into the cloth-room where folding-machines, making the bolts seen in shops, were being run by boys who did not look any older than Philip himself.

"Those boys are very proud of their work," said Mr. Carter as they passed through the room. "I suspect they like it as well as you do making small cotton-gins," for Philip had told the superintendent of his water-wheel and gin at the plantation.

"How many states raise cotton, Mr. Carter?" questioned Philip as they made their way back to the office.

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"It is the principal product of eight great states, and the most valuable 'money crop' of the entire country," replied the superintendent. "Of the four great staples that provide man with clothing, cotton, silk, wool, and flax, cotton, by reason of its cheapness is the most important."

"My father told me that cotton cloth was first made in India," ventured Philip.

"I guess your father can tell you a great deal more about the early history of cotton than I can," replied Mr. Carter; "but I do know that at the very beginning of the eighteenth century cotton culture in North Carolina had reached the extent of furnishing one-fifth of the people with their clothing, and it was all spun and woven by women on hand-loom."

After receiving permission to visit the mill again, Philip bade Mr. Carter good-bye and hastened home to begin work on the spinning-wheel which he had so long promised to make for his sister Helen. Before leaving the plantation he had secured a smooth strip of ash from Uncle Mose to use for the rim of the wheel, and he had

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whittled out the smooth spokes, so that now he had only to put the wheel together and make the bench to support it.

Tom watched Philip busily at work and said: "How long you calkilate to wuk on that machine?"

"I want to get it well started to-day," replied Philip; "you see, I shall have to go to school next week and then I'll not have much time for it."

"An' I'll hev to go home nex' week," Tom reminded him a little dolefully.

"So you will, Tom!" exclaimed Philip, "and it isn't much fun for you to see me hammer away on this, is it! What would you like to do?"

A wide smile spread over Tom's face. "I'd like to go up an' see the State House whar dey mek laws! Yas, sah! Dat's w'at I'd shuh admire to do."

"I'll ask mother," responded Phil, leaving his work, and running to the house.

Mrs. Piedmont gave her consent, and the two boys started toward the State House.

"I 'spec' de hev mighty fine machinery in dar,"

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suggested Tom, as they went through the well-cared-for grounds and up the marble steps.

"Machinery?" repeated Phil, "what would they have machinery here for?"

"To make laws wid," answered Tom.

Phil stopped and looked at his companion in amazement. "Tom," he exclaimed, "you don't know what a 'law' is."

"'Spec' I don't," agreed Tom, with a chuckle; "but I'se allers hearin' 'bout 'em; an' Uncle Mose tells me when I comes in to see you I mus' suttinly go to the State House whar de laws is made. What is a 'law'?" and Tom fixed an anxious look on his companion.

"A law is just like this," declared Philip; "if my father says that I must go to school because it is best for me, why, then I must go. He has made a law for me. And the way laws are made at the State House, Tom, is just the same. Every town picks out some man whom they know all about, and asks him to come to the State House here in Columbia and talk over things with men from other towns, and see what is best for people to do.

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Then when these men meet and decide what is best for people to do they have to do it, just the same as I have to go to school, because it is the best thing to do. Because it's a law. My father told me all about it."

"Is dat what a law is?" questioned Tom. "I was shuh it was some kind of cotton machinery, yas, sah!" and the negro boy chuckled as if delighted at his own mistake.

"I don' wantah to go in now," he declared; "if a law is jest som'thin' yer got to do, why yer couldn't see it made, c'u'd yer. I s'pose de mens talks considerabul w'en dey gets here," he concluded.

"Yes," replied Philip, "I came up here last winter and heard them talk, when they were making a law so that children should not work in the mill at night."

"I reckon dat's a good law," said Tom more soberly. "I'se mighty glad I ain't no pore white chile an' hev to wuk shut up in dose mills."

As the boys talked they had turned away from the State House and were walking down the street

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toward the mills. They could see teams loaded with bales of cotton coming in and driving into the mill-yards where the bales were weighed and sent to the picker-room. Negroes were unloading the cotton, and were singing and joking as they worked. As the boys walked slowly along Mr. Carter came through the mill-yard and nodded pleasantly to Phil.

"Where are you bound now, Philip," he asked, and Phil explained that he had just taken Tom to see the State House, and now they were only walking about.

"I am just going for a drive toward the other end of the town; you boys can go with me if you like," said the mill superintendent; and Phil thanked him, saying that he would like very much to go. Tom nodded his smiling approval. Riding about with Philip and "Boss" Carter was much more to his mind than working about the cotton-gin or in the stables at the plantation.

"When you come in to the mill again, Phil," said Mr. Carter, "you must see the power-house; it drives not only a couple of mills but supplies

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electricity to light the city of Columbia and work the street-car service. We are very proud of our engine room."

"I'd like to see it," said Phil. "I wish I could work in a cotton-mill, Mr. Carter. Father says perhaps I can some vacation."

A smothered ejaculation from Tom on the back seat made both Mr. Carter and Phil look around; and Phil laughed at the expression of dismay on Tom's face.

"Don' want no cotton-mill," he declared. But Mr. Carter had a different opinion.

"There is no finer business in the world, Philip," he said, "and I shall be glad to tell you all I know about it. Why, cotton is the finest crop in the world to raise, and the prettiest to manufacture into cloth. Just think of how important it is, and think that we are the greatest producers of cotton in the world. We furnish four-fifths of the cotton for Europe and the United States."

"And the cotton-plant has to fight for its life, too," said Philip, remembering what his father

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had told him of boll-weevils, and other insect enemies.

"Indeed it does. I suppose you know all about the black rust which destroys so many promising cotton crops?"

"No, sir," replied Phil.

"It's a trouble which generally shows itself when rains are frequent. The leaves curl up, the plant does not develop, and early in August the planter begins to realize that his crop is seriously injured. Then, too, sometimes the bolls dry up before they are well-formed and drop off; and there is also a kind of rot which attacks young plants. You see I am almost as much of a cotton-planter as I am a mill superintendent. If you have anything to do with cotton, Phil, you must understand it from the seed to the loom."

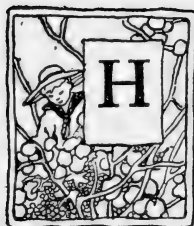
"Yes, sir," replied the boy, "that's what I want to do."

When they returned from their drive it was too late for Philip to work on the spinning-wheel; but he promised Helen it should surely be finished before school began.



CHAPTER XI

VEGETABLE LAMBS



ELEN watched Philip at work on the small spinning-wheel with great interest. Philip told her about many of the machines that he had seen in the big cotton-mill, and repeated the stories which had been told him of the different inventors.

Philip's workshop was in the shed near the stable, and Tom helped him by planing off the plank which was to be the top of the wheel-bench, and busied himself in sand-papering the wheel-spokes to a proper degree of smoothness.

On the last morning of Tom's stay, Mrs. Piedmont came out to the shed, bringing a book with

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her. "How would you like to have me read you a story about cotton, children?" she asked, seating herself on a big box near the door.

"First-rate!" replied Phil. "Yes, indeed!" declared Helen; while Tom smiled and nodded in satisfaction.

"Well," said Mrs. Piedmont, "this story was written many hundreds of years ago. Like many other important things, the origin of the cotton-plant is a mystery, and in the old days many false and amusing stories were told about it. By some it was believed that in India and Tartary there grew a wonderful tree which yielded buds still more wonderful. These, when ripe, were said to burst and expose to view tiny lambs whose fleeces gave a pure white wool which the natives made into clothing. Now, the story I am going to read you is called 'The Vegetable Lamb,' and gives the old ideas about cotton."

"How old?" asked Helen.

"About a thousand years," replied Mrs. Piedmont, and began to read:

"A wonderful tree groweth in the country of the

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Tartars of the East. It beareth a blossom and the blossom ripens to a fruit. When the fruit is fully ripe, the outer skin or shell opens and a small lamb appears attached to the top of the stalk. This stalk is strong and flexible, and the tiny animal can bend downwards, and browse on all herbage within its reach. After it has eaten all the grass within its reach, the stem withers and the plant dies. This little vegetable lamb is a favorite food of wolves, though no other animal will attack it."

"What a silly idea!" exclaimed Philip.

"We know it to be silly now," replied his mother, "but in those days many wise people believed it. It was not until 1725 that a German doctor named Breyn stated this story to be simply a fable; and he very truly said that the works and productions of nature should be discovered, not invented. There are even older stories about cotton," continued Mrs. Piedmont, "stories written by Herodotus, the Father of History, over two thousand years ago. Herodotus traveled in many countries in Europe, Asia, and Africa. And he re-

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solved that he would write only of those things which he had seen and really knew about, and that he would not write down what other people told him unless he had seen it. In describing India and the cotton-plant, he says: 'The wild trees in that country bear for their fruit fleeces surpassing those of sheep in beauty and excellence, and the natives clothe themselves in cloths made therefrom.' And he tells of a machine used for separating the lint from the seeds.

"Then there was another historian of those far-off days who observed carefully and recorded exactly what he saw. His name was Theophrastus; and he said that the cotton-plant of India had leaves like the mulberry tree, that it looked not unlike the dog rose. He wrote that it grew in rows, very much as it does now, and that its fiber was woven into garments."

"Then they must have had spinning-wheels thousands of years ago," said Philip.

"I suppose they did," agreed Mrs. Piedmont, "and we read in the Bible, in the Book of Esther, about cotton hangings of 'white, green, and blue,'

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so they must have understood, even in those days, how to weave and dye cotton."

"Oh! Here's father!" exclaimed Helen, as the roll of carriage wheels made them all look out toward the driveway; and in a few moments Mr. Piedmont joined the little group; Tom running off to be sure that "Lady" was well cared for.

As Mr. Piedmont came into the shed he put down a small package on the box beside his wife.

"Here is something that I am sure will interest Phil," he said smilingly. "It is a new microscope, and I have brought in some cotton fiber. You don't know what cotton is, my boy, until you see it through the microscope."

Both the children deserted the work-bench, and came to watch their father unpack the fine microscope containing an adjustable glass. On the slide of the instrument Mr. Piedmont carefully adjusted several strands of cotton.

"Now, Philip, you can look first, and then I am sure you will understand what is meant when you hear people speak of the 'natural twist' of cotton."

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"It doesn't look a bit as I thought it would," declared Phil, his eye close to the glass; "why, some of it looks as if it was all twisted, and some of it looks flat, like ribbon, without any twists."

"Yes, that which shows a distinct twist is cotton that is fully ripe and ready for manufacture; but the other is the half-ripe cotton which has been gathered too soon. The unripe cotton cannot be dyed; and sometimes when you see small white specks in any cotton cloth which has been dyed, you will know that it is due to the fact that unripe cotton was used in making the cloth."

They were all greatly interested in looking through the microscope; and Phil called Tom to come and see the cotton-twist. The negro boy looked at it wonderingly and shook his head. "I'd a sight ruther see it a-growin'," he declared.

Tom started for the plantation that afternoon, taking Tip and Top with him; as it was decided that the puppies would be much better off at the plantation.

"Aunt Cassie, she won' be noways pleased to see

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'um back," declared Tom, as the spaniels were put into the wagon and he started off on his homeward drive.

"I have been reading to the children what people used to think about cotton two thousand years ago," said Mrs. Piedmont, as the little party started toward the house.

"Then perhaps I had better tell them something about cotton two hundred years ago," replied Mr. Piedmont, "although the beginning of the culture of cotton in the United States occurred about one hundred and seventy-five years before it became of much importance. The first effort to produce cotton on the North American continent was probably made in Virginia when the first colonists arrived."

"When did South Carolina begin to raise cotton?" asked Philip.

"In 1660, or about that time," answered Mr. Piedmont, "and in 1708 it was one of the chief products of the State. In 1762 a paper printed in London said that the Carolinas furnished excellent cotton and silk."

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"I think that what mother told us was more interesting," declared Helen.

"Come into the library," responded her father laughingly, "and I'll find a story that you will like just as well as you did that Vegetable Lamb fable."

"Father," said Philip, "is the root of cotton good for anything?"

"Yes," replied Mr. Piedmont. "The *American Journal of Pharmacy* says that the bark of the roots of the cotton-plant yield a drug useful in medicine; in its effects it is much like ergot."

"Find the story, father," urged Helen, and Mr. Piedmont took down a large leather-covered book from the book-case and began turning over its leaves.

"Your mother's story was about the cotton-plant," he said; "now suppose I tell you something about cotton cloth as it was first made in England? You know the planters in this country sent, and still send, bales of cotton to England, where it is spun into yarn and woven into cloth. In the latter part of the sixteenth century, that is, about three hun-

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dred years ago, they began to spin and weave in their own houses, in English villages. But their machines were not much better than those used in Persia two thousand years before. When they had finished a web of cloth they had to carry it a long distance to sell it. And it was not until Hargreaves, Arkwright, and Crompton, and other inventors, made the carding-engine, the spinning-frame, and other inventions, that the weaving of cotton became of importance in England. With them, necessity was the mother of invention; some better way than the hand-loom had to be discovered to weave cotton."

"Richard Arkwright is the one you told me about," said Philip.

"Yes, and here is what Arkwright has to say about his invention," and Mr. Piedmont read slowly in order that Phil might understand: "'I have by great study and long application, invented a new piece of machinery, never before practised or used, for the making of weft or yarn from cotton, flax, and wool, which would be of great utility to a great many manufacturers, as well as to

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His Majesty's subjects in general, by employing a great many poor people in working the said machinery, and by making the said weft or yarn much superior in quality to any heretofore manufactured or made.' When Arkwright was at work on his inventions there was a little boy named Samuel Crompton, growing up in a neighboring English village, who was working out a machine equal to Arkwright's."

"Did Arkwright ever see this boy?" questioned Philip.

"Very likely. Young Crompton lived in Bolton, and Arkwright was at one time a barber in that town. Crompton helped his mother in weaving, and he knew that more yarn ought to be spun to supply the weavers, and he worked steadily at the problem until he had greatly improved upon all other inventions. But he reaped but little profit from his inventions."

"I think as Tom does about cotton," said Helen, who had been listening. "I think that the nicest thing about it is to watch it grow in the cotton field."

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"I like to watch it being gathered," said Mrs. Piedmont.

"And it's fun to see it ginned and baled," declared Philip.

"And I like to see the teams carting the bales off to the mills," said Mr. Piedmont, closing the book and putting it back on the shelf.

"And it is great to watch it spun into thread and woven into cloth," added Philip.

"It is good fortune when the cotton escapes all its enemies and reaches the mill in good condition," said his father; "then the planter feels that cotton is the finest crop that grows. I have told you, Phil, about the different insects which attack it, and of the diseases to which the plant may yield; and you know that too much rain means that the crop will rot; and that a sharp frost in spring will kill the young, tender plants; so you see a planter has reason to rejoice when the cotton is safely picked and ginned."

"Yes, indeed," said Phil. Just then they were interrupted by a queer scrambling noise on the

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front piazza, and they all hurried out to see what it was.

"It's the puppies!" declared Helen; "they have jumped out of Tom's wagon and come home."

Tip and Top seemed sure of a welcome, and jumped happily about their little mistress. It was not long after that the sound of wheels was heard and Tom's mule came trotting up the street.

"They jus' boun' ter git outen this wagon," explained the boy.

"You can leave them, Tom," said Mr. Piedmont. "I'll bring them out with me Monday morning." So Tom started off again for the plantation, chuckling to himself in satisfaction that he would not have to bother with Tip and Top on his journey.



CHAPTER XII

CLUBS AND COTTON



OTHER!" said Helen as she came in from school one October afternoon, "our school is going to have a Cotton Exposition! And the teacher has asked me to bring my little spinning-wheel."

"Well, you must tell me what a 'Cotton Exposition' is, my dear," replied her mother.

"Oh, mother! Of course you know," said Helen. "Why, it is what father went to Atlanta to see. It's where you see all kinds of cotton, and how it is woven, and find out things about it."

"But how can your school do that?" asked Mrs. Piedmont.

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"The teacher is going to have each pupil tell something about cotton. I am to bring my little spinning-wheel and tell all I can about spinning. Philip is to bring the microscope and show the other children the twist in the cotton and tell all he knows about the men who invented machines to twist cotton into thread, and each of the boys and girls has something to tell about. And the teacher is going to ask all the fathers and mothers to come. It's to be next Friday."

"I think it will be very interesting," said Mrs. Piedmont, "and the children in your school will all learn a great deal from a 'Cotton Exposition.'"

When Friday came the big airy school-room did not look much like a school-room.

The blackboards were framed in fleecy masses of cotton. There were strips of woven cotton cloth hanging on each side of the windows, and cotton shrubs in small earthen pots were set in the corners of the room.

On the platform was Philip's gin, which his father had brought in from the plantation, Helen's spinning-wheel, and a small model of a loom for

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weaving cloth which Mr. Carter had loaned them.

There were many fathers and mothers present, and as each pupil stepped to the platform and announced his subject and then described some fact about cotton, Mr. Piedmont whispered to Mr. Carter that he was learning more than he did at the Atlanta Exposition.

Helen's little spinning-wheel was greatly admired by the other little girls. She showed them how by the motion of her foot she could keep the wheel revolving and twist the fleecy cotton into a fine thread.

One boy, somewhat older than Philip, took a spool of white cotton thread and told just how it was made and wound upon a spool. Then an older girl held up a dainty apron of fine white cotton, trimmed with cotton lace made by machinery, and said, "This apron really grew on shrubs like those in each corner of the room. It began as a blossom on the cotton-plant, then it was a white, fleecy mass of lint, then it was spun into fine threads and woven into fine cloth and lace. But it really began on plants like these."

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Philip explained what the twist in the cotton meant so plainly that all the children understood that the twist meant strength. They all took turns in looking through the microscope at the cotton fiber, and at the boll-weevil, and then at the finished cotton cloth.

"Now, children," said the teacher, "we will bring our cotton exposition to an end by singing our song of cotton."

The boys and girls all rose, and in a moment the big room was filled with their sweet voices.

"We sing of fields a-blossom,
Beneath the fair sunlight;
We sing of fields of Cotton,
There is no fairer sight.

The gift of our fair Southland
To all the world we send;
There is no fairer blossom
Than Cotton, useful friend."

"Father," said Philip as the two walked up the street toward home, "I think to-day has been the

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best day of the whole term. Lots of the boys are talking about cotton and machinery, and we are going to have a club and call it the 'Cotton Club.' I thought perhaps we could meet in my workshop."

"Why, yes, Phil," replied his father, "that will be a good place for a club; but what are you going to do?"

"First, we're going to elect a president," said Phil; "the boys all want me to be president because they think I know a lot about cotton. And we are going to meet every Saturday afternoon and talk over cotton. And we're going to have a rule that if any boy talks of anything else that he can be expelled from the club."

Mr. Piedmont laughed at this proof that it was to be a Cotton Club, and said: "And what else are you going to do?"

"Well," said Philip thoughtfully, "we are going to offer a prize to the boy who can invent any kind of a machine to spin better cotton yarn; and another prize to any boy who can find out a sure way to get rid of boll-weevils. You see," contin-

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ued Phil, "each boy will have to pay twenty-five cents to join and five cents a week to stay in, so in a year we shall have money enough for the prizes."

"I think a Cotton Club is a fine idea," said Mr. Piedmont, "and when you have your first meeting I shall be very happy to treat the club to ice-cream."

"Will you really, father! We shall meet to-morrow!"

"Then I shall order the ice-cream to-morrow morning," said Mr. Piedmont.

By this time they had reached home, and as they went up the veranda steps Helen and another little girl came running to meet them.

"Father!" exclaimed Helen, "this is my friend Virginia Stevens. She is president of our Spinning Club."

"And what is the Spinning Club?" asked Mr. Piedmont, as he shook hands with the slender, dark-eyed Virginia.

"It's our new club," explained Helen; "we girls at school have been talking about cotton, and how

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it grows and is woven into cloth, and about how our grandmothers used to weave bedspreads, and spin yarn, and we all thought it would be a good idea to have a club and meet every week."

"But why do you call it a 'Spinning Club'?" questioned her father.

"Because we are all going to spin!" answered Virginia; "we are all going to have little spinning-wheels like Helen's, and the one who spins best is to have a prize."

"There, Philip," said Mr. Piedmont, turning to his son, "there is work for the Cotton Club. You boys can begin to-morrow and make spinning-wheels for the girls. You can talk cotton just as well if your hands are busy as you can if they are idle."

"That will be great fun," said Phil, eagerly; "but I will have to go out to the plantation to get the right kind of wood."

"I'll drive you out to-morrow morning," said his father, "and you can have your wood all ready by the time the boys get here in the afternoon. You had better see them all to-night and talk it

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over with them, and tell them what tools to bring to work with."

"I'll go find them now," said Phil, and started back down the street.

The little girls were very much pleased to think that each one in the Spinning Club would soon have a wheel exactly like the one Philip had made for Helen.

Mr. Piedmont promised to furnish the club all the cotton they could spin; and said that some Saturday he would drive them all out to visit Aunt Juno, and that she would tell them a great many things that the members of a Spinning Club ought to know.

That evening, after Virginia Stevens had gone home, and while Philip and Helen stood on the veranda looking at the stars, which seemed to grow nearer as cool weather approached, Helen said: "Phil, hasn't it been a nice summer?"

"Yes, it has," agreed Phil, "and all because we were out at the plantation, and could watch the cotton grow and blossom and be gathered. And now we will have a fine time in Columbia, because

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we will be learning more about cotton at our clubs. I tell you, Helen, there's nothing like cotton."

"That's what all Southern boys think," replied his sister laughingly.

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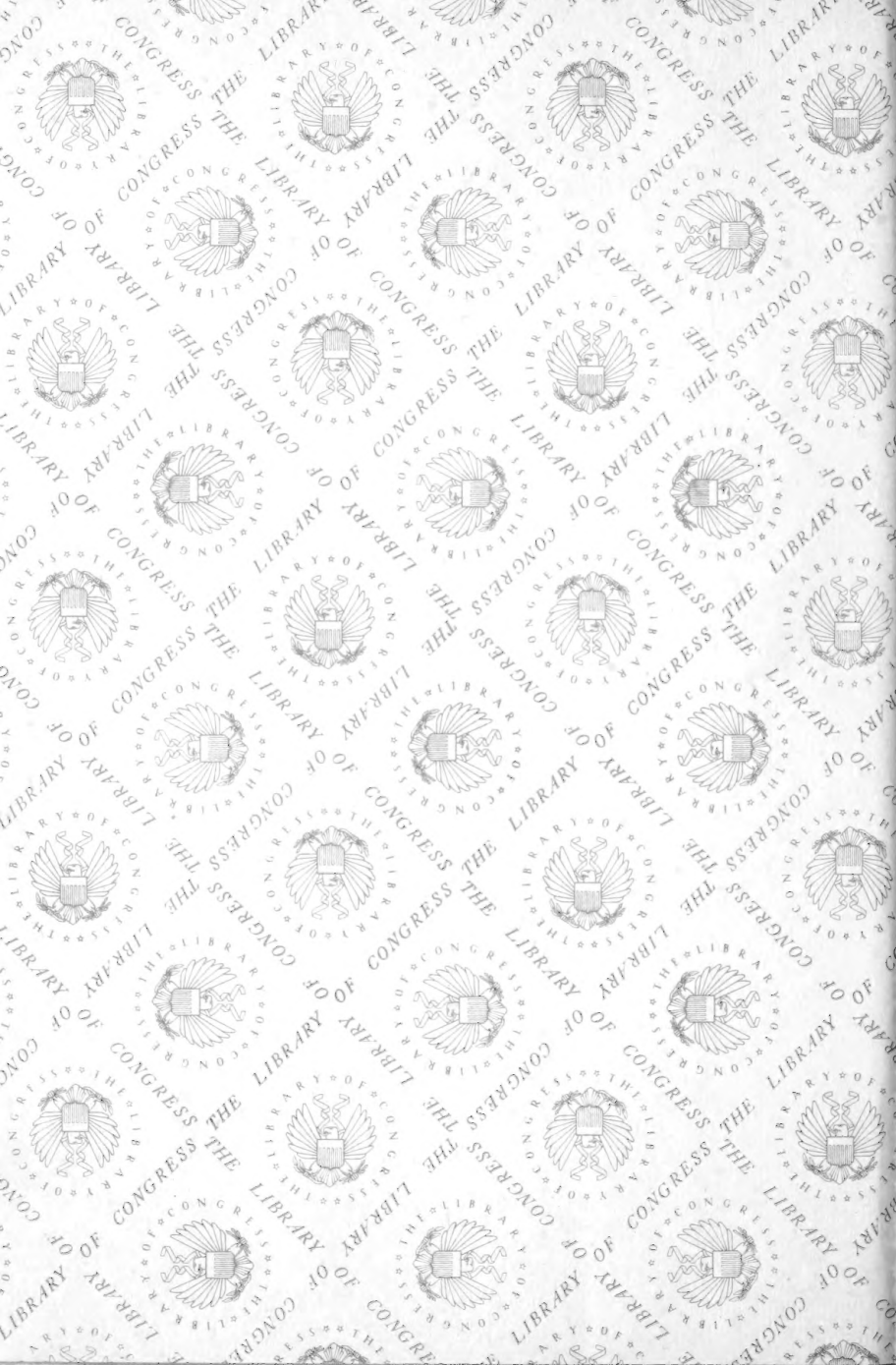
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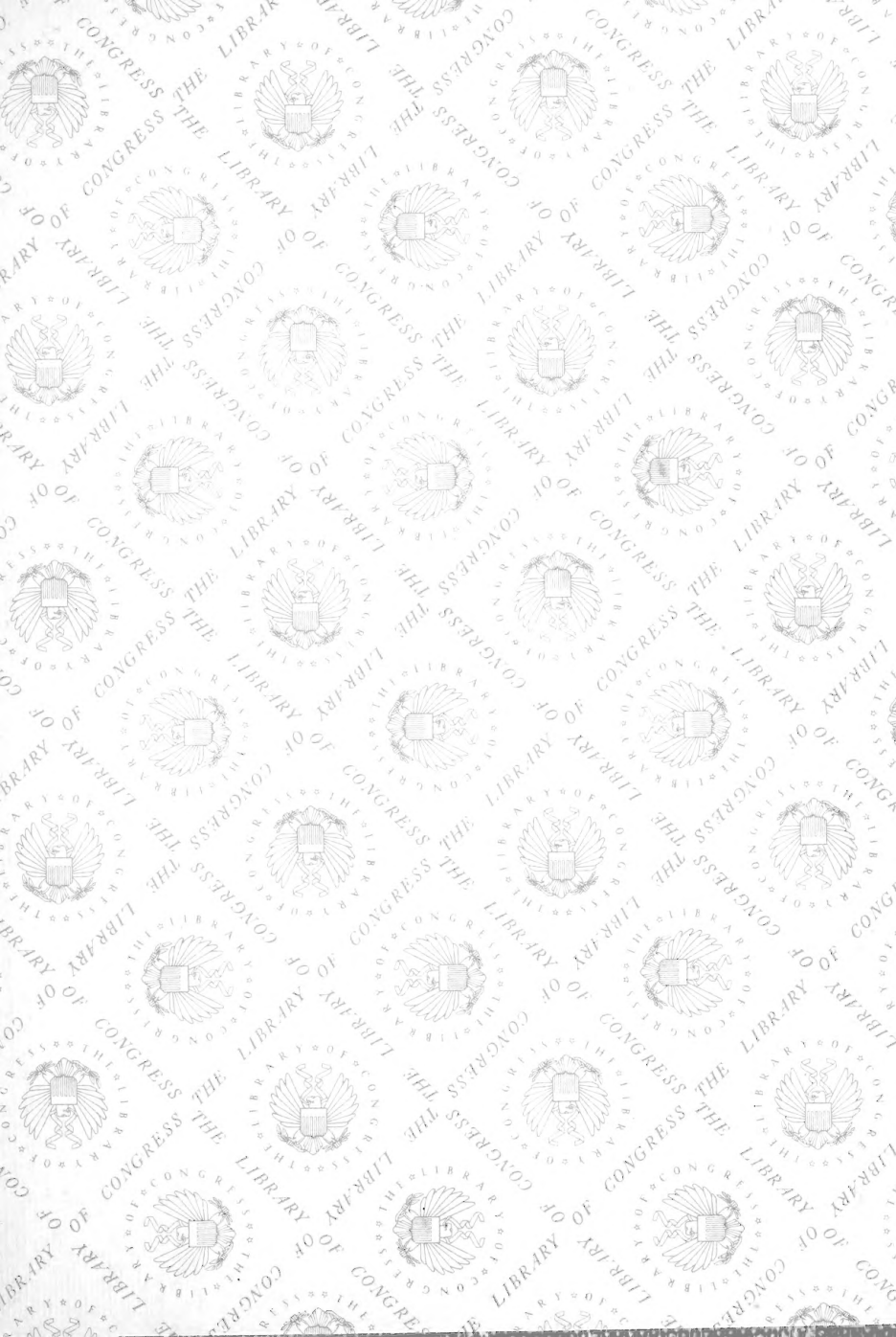
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